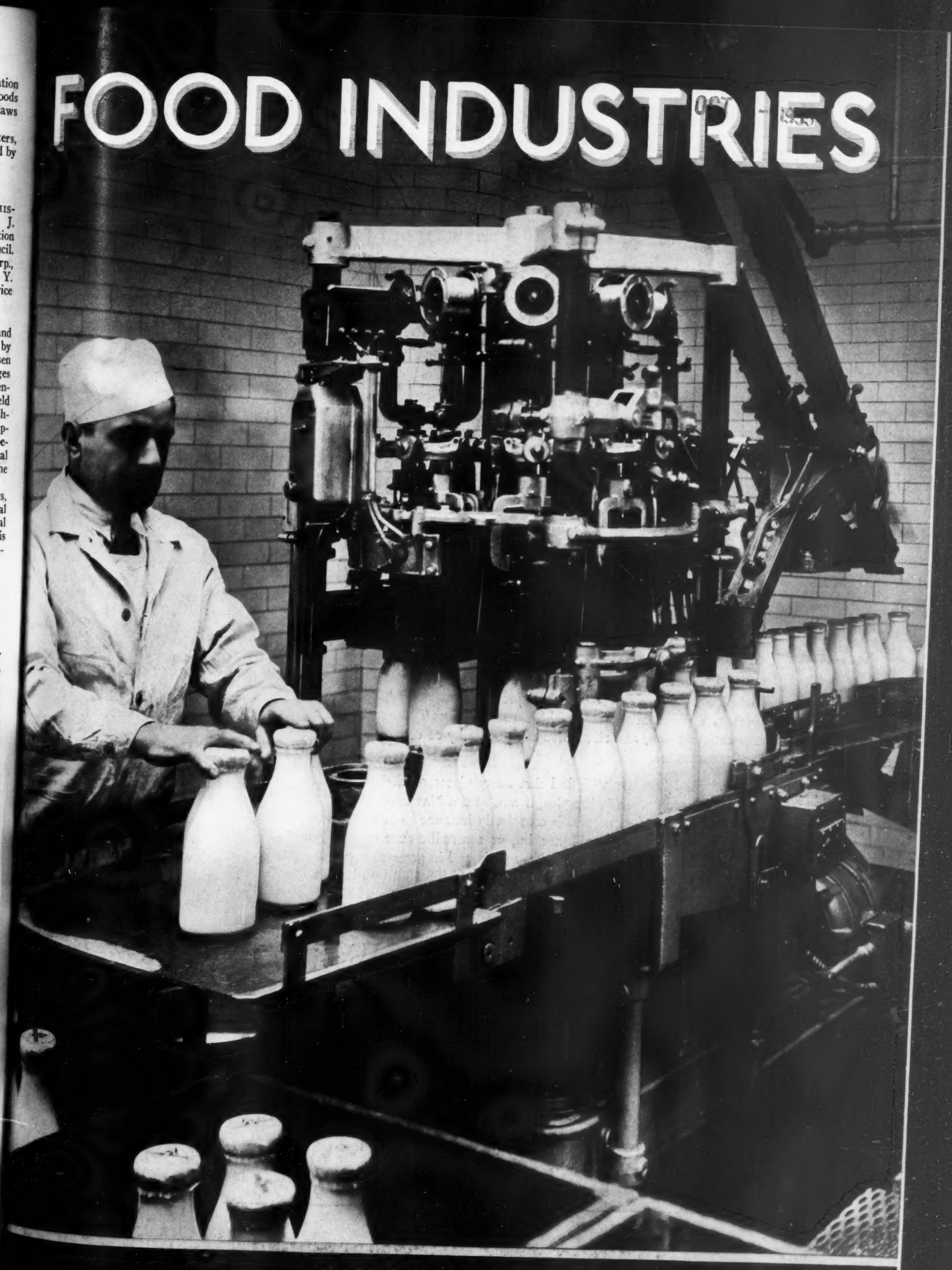
FOOD INDUSTRIES

OCT 1935



OCTOBER, 1935

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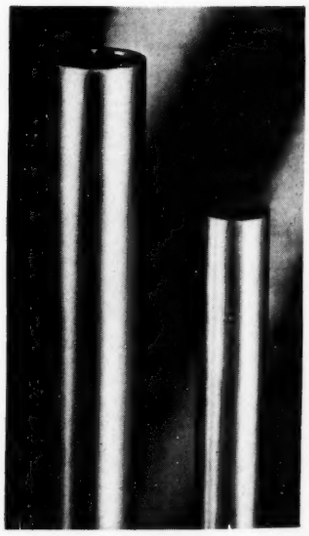

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FOOD INDUSTRIES

PRODUCTION • ENGINEERING • DISTRIBUTION

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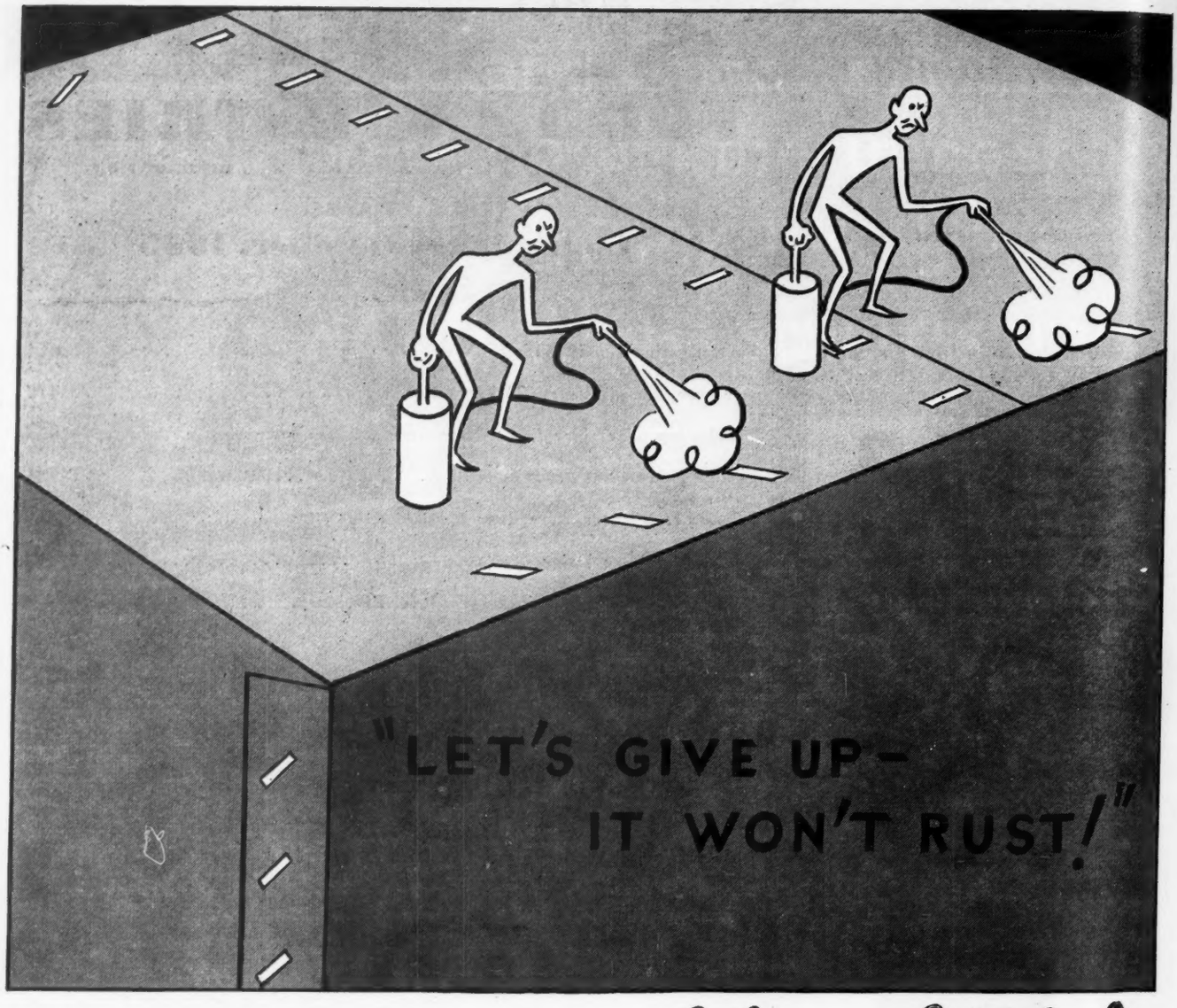

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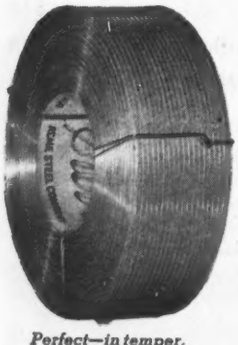

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FOOD INDUSTRIES

PRODUCTION • ENGINEERING • DISTRIBUTION

Established 1928—McGraw-Hill Publishing Company, Inc.

Vol. 7, No. 10

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Laurence V. Burton, Editor

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OCTOBER 1935

THE TALK OF THE INDUSTRY

IN LIGHT-HEARTED moments the urge comes over us to be Secretary of Agriculture, and then something always comes up that makes us realize that it would take a whole lot more than a cabinet officer's salary to

make us happy in that job. Not even the privilege of making a few salary "adjustments" and several changes in administrative personnel would tempt us to change jobs with Henry A. Wallace since the "Potato Act of 1935" has become law.

It isn't that we shrink from the exercise of clear-cut authority and responsibility. If we possess any modest reluctance, it is because we have studied the act, and because we are gun-shy. In two decades of dealing with farmers we have acquired a definite concept of their behavior in defending their real or imagined rights.

The mob in Iowa that put a rope around the neck of a judge who had ordered a mortgage foreclosure farm sale two or three years ago will be like a group of youths doing a Maypole dance, compared to the things that will happen when Mr. Wallace tries to put the "Widow Hicks" in jail for selling potatoes without either a tax stamp or a tax exemption stamp.

It begins to look as though the Secretary of Agriculture will need as many bodyguards as the President, and also that county agents are going to be hard to employ. We wouldn't mind the problem of hiring county agents. But all of the bodyguards which we have seen in actual life are rather sinister, dour, unsocial creatures. Fancy being tagged around by a bunch of third-rate ex-pugs or ex-gangsters!

NEW FOOD NOTE: Manufacturers of frozen confections who have equipment and licenses for making Popsicles have a splendid opportunity to cultivate the Negro trade with a new confection. It will have instant appeal to any person whose skin suggests a racial relationship to the Ethiopians.

Of course, the handle of the frozen confection is to be an Ethiopian spear, in facsimile, impaled on which is a small frozen image of the cause of the Ethiopian consternation. The merry gentleman who proposes the food novelty introduces a note of low humor by suggesting that the face of the image should be sculptured to imitate the look of mingled distress and surprise which comes over one receiving his first dose of what is known, in hospital parlance, as "high colonic."

The name for the new confection? We'll give you one guess. It rhymes with Popsicle.

REFRIGERATION NOTE: The FOOD INDUSTRIES prize for new discoveries in physics and engineering goes this month to the manufacturer of refrigerators who has put out a bulletin from which the following is quoted ". . . foodstuffs in the case are cooled by radiation from the diffusion coil. . . ."

Now that it has been shown that cold can be radiated, this department can see no reason why New Deal debts cannot be discharged by the simple process of hauling them out to the dump.

PROFESSIONAL CONSUMER NOTE: A strike in early September, by the newly-formed Technical, Editorial and Office Assistants Union against the professional consumer organization known as Consumers Research, Inc., has filled this department with sorrow and woe.

We are nothing if not sympathetic with a contemporary publisher who is having his troubles. Even though we do not admire his circulation methods, we must admit their effec-

tiveness, provided, of course, that one wants that kind of customers. To build up a list of about 60,000 subscribers during the depression is something of a publishing achievement, even when the subscribers may be those humorless people who prefer to get their thrills at $3 a year by reading "confidential bulletins" to the more popular method of going to the movies or matching wits with other people.

Every so often some of C.R.'s customers write to us, denouncing the

food manufacturer's exploitation of the consumer. One of them, out Milwaukee way, worked himself into what appeared from this distance as a frenzy of rage. His letters bore evidence of long pent-up wrath. But we have always felt that he was so busy denouncing us and the wicked food manufacturers, that he did not pay enough attention to his own job. At any rate, he lost it, and at the same time he lost his inclination to denounce us.

Our sorrow over the strike at C.R. comes from the fact that we had believed that the C.R. crowd were sincere extreme liberals. Imagine our dismay at reading such a paragraph as the following in the liberal New York *World-Telegram* on Sept. 5:

"They (the strikers) charged that the president and three employees active in union work were discharged for union activity, 'a sample of objections' to them being that one 'once took both milk and coffee for lunch in the C.R. lunchroom, and that he had once ordered three pieces of toast and ate only one.'"

Where, pray, does liberality begin? If this department wore a beard we would tear out our tenderest whisker in protest over such exploitation.

Sign of the Times

ONE who reads closely the metropolitan dailies, especially the Sunday papers, will detect an unfailing sign that things are getting better. Within the past month we have seen several farm ads which call attention to the opportunities for gaining financial independence by purchase of a grapefruit grove.

If the promoters of these wholly unneeded new groves succeed in attracting enough optimists to make a go of it, we can expect to see a resumption of selling pecan ranches, grape ranches, peach orchards, orange groves, chicken ranches, avocado ranches, fox farms, et cetera. Of course, the ideal solution would be for somebody to be smart enough to discover a way to get paid for not buying a little farm.

Looking Ahead

AMERICA needs more domestic industrial food-fat and oil supplies. The national deficiency is serious, more serious today because cocoanut oil and other soap oils are subjected to an extra consumption tax under the guise of protection for the dairy industry. Why is the South not put to work growing more of these materials? That territory desperately needs new agricultural jobs.

Cotton as a profitable cash crop in the South appears to be permanently injured by AAA policies of the past two years. Foreign customers have been alienated, some of them permanently. Those who formerly grew cotton now can and should go to work on the production of new products.

Many think the South will become a food-growing, food-processing region far outweighing in importance anything of this nature it has achieved in the past. If so, food manufacturers have a double interest in the present agricultural trend in Dixie. As often pointed out in these columns, the South is a great importer of foods despite the fact that potentially its food producing efficiency is greater than the territory from which it buys.

New food geography is in the making. All divisions of the industry should take notice and plan accordingly.

Breathing Spell

THE head man of the New Deal promises a breathing spell for business—an admission that business has been pummeled unduly, and a fact which cannot be gainsaid. But, how long is the breathing spell and how will it be evidenced? We confess that we are more apprehensive than before.

Among the things that make us skeptical of this promise is the fact that the President persists in trying to prop up industrial regulation with something like NRA, regardless of what the Supreme Court says about his right to do so. During the closing Congressional week-end, the President even asked House and Senate

Hors d'Oeuvres

• *Bread in bright colors will soon make its appearance in Spokane. No doubt, this novel product will satisfy the flair for kitchen color and will enable madame to serve sandwiches which match her new gown. But there's an incidental question as to whether anyone will eat it.*

• Maintaining that Red Star Yeast & Products Co., Milwaukee, advertised its yeast as valuable in facial treatments, the government is seeking to collect from the firm more than $1,000,000 in luxury excise taxes. Who says it pays to advertise?

• *Missourians, who always must have something to show for everything, are receiving milk bottle caps as receipts for the State one per cent retail sales tax. The caps bear the state seal, making them worth less than nothing, since they can't even be used on milk bottles.*

• The book, *"Diet and Efficiency,"* advocates five meals a day, holding that personal efficiency increases ten per cent after a mid-morning or mid-afternoon lunch. But what about that full-stomach snooze?

• *It's a still wind that blows nobody good. And the muchly bewailed high pork prices have given negro tenant farmers in Georgia their first break in years. These colored folks have had to eat chicken instead of their customary salt pork because of the New Deal economics.*

• *Boulangeries Babillardes* was the name given to Roman bakeries in the good old days when Horatius defended the world's longest single-span bridge. There were 300 bakers in Rome in those days—and even then not one of them could bake a cake. Each baker had a mill consisting of two stones worked by hand. Women collected at these bakeries and talked, even as they do now, so the places were dubbed babbling bakeries, or *Boulangeries Babillardes.*

• *One million farmers have had to be fed with public funds. And there goes the happy illusion that we could always go back to the farm and eat!*

• The AAA has set aside $80,000 to experiment with high-frequency radio waves as a means of killing the Mediterranean fruit fly. Wonder if they have thought of slaying the insects with broadcasts by crooners and bum comedians.

• *An old timer in the dairy industry tells how his Oklahoma City firm encountered an unexpected consumer reaction at the turn of the century. The company received many complaints because the milk did not have that good old barnyard flavor. Tastes do change.*

CONSUMERS' RESEARCH Workers - are - GUINEA-PIGS
SCHLINK SAYS
"WHAT'S HAPPENING?!"
LEAGUE OF Women SHOPPERS asks investigation of C.R. LABOR CONDITIONS

WHO'S A GUINEA PIG?

Fred J. Schlink, president of Consumers' Research, Inc., knows all about guinea pigs, being co-author of a book about 100,000,000 of them. So he was able to comprehend the meaning of at least one of the posters carried by his striking employees, three of which are shown above.

leaders to set up a joint Congressional committee to figure out before next January how to reestablish NRA. He didn't put it exactly that way, but it was clearly what he meant.

And now Washington sees definitely that the President intends to mount something faintly resembling NRA on a three-legged support of his own immediate assembling. The extension of NIRA in a skeleton body for investigation (we call it snooping) is but one part of this idea. The new Labor Relations Board is going to be used vigorously also for the same purpose. And trade practice conferences under Federal Trade Commission management are definitely being encouraged despite an earlier faintly concealed hope on the part of the Trade Commissioners themselves that they would not be drawn into this difficult situation.

Thus far, of the formal applicants before FTC for code development, there are practically no food industries. The Pacific Coast butter, egg, cheese, and poultry folks are present; but the problems they present are certainly not primarily those of food manufacture. Furthermore, food processors will recognize that the Federal Trade Commission by law can give them hardly anything more than merchandising attention.

All this review of the situation means simply that the subject is still important, the desire is still existent, and occasionally the effort will be vigorous—even to the point of annoyance. Progress, however, promises to be continuously conspicuous by its absence.

Potato Control

NO MORE astounding move away from liberty of action has come from Washington than the Potato Control Act of 1935, a part of the new AAA amendments. In its political aspect, it is repellant to nearly every one, save those who for a long time have been potato growers, for it requires any one who wants to raise more than 300 lb. of potatoes to secure a federal allotment—a permit to do so. And failure to comply means a fine or jail.

On the whole, however, the food processing industries will be benefited by the existence of this law, and should hope that it will be vigorously enforced. In particular, macaroni, flour and baked goods will find that, for at least a year, competition from potatoes will be somewhat less than heretofore. After the first year of control the farmers will be polled by a referendum to determine their desires for a continuation of potato control.

In self-interest, the food industry should cooperate in every way to send to jail any wretched unsocial creature who breaks the law by raising potatoes without a permit.

Federal Land Purchases

TEN acres of marginal land is to be retired by public purchase for every acre of newly irrigated land that is to be offered to the public. The administration has provided the Resettlement Administration headed by Professor R. G. Tugwell, the Bureau of Reclamation, the Forest Service, and other alphabetical agencies with generous funds for this purpose. They have been told to buy immediately a million acres to offset the 100,000 being put into cultivation this year by reclamation activities. Furthermore, an additional 4 million acres will be required to offset irrigation projects which have been recently completed. And Professor Tugwell's Resettlement Administration has optioned approximately 11 million acres, but only accepted 3.5.

But one wonders just what will be the political effect of all of these switches. The outstanding fact is that there are more voting taxpayers than there are farmers needing relief.

To Increase Wheat Consumption

OBSERVATIONS on the subject of the declining per capita consumption of wheat leads to the opinion that the decline is due to four general causes which, in order of their importance are:

1. Declining energy requirements, i.e., competition with mechanical power;
2. Competition with other foods;
3. Physical discomfort of women in hot kitchens which curtails home baking;
4. The time factor involved, i.e., competition with other activities of life.

It appears to us that only No. 3 is capable of modification. We believe that a cooperative program, designed to produce relief from excessive heat in domestic kitchens would do much to improve the quality of home-prepared foods and would lead to increased consumption of hot breads in the home during the warm and hot months.

Such a forward step calls for cooperation between millers, stove manufacturers, architects and municipal legislative bodies. The latter is necessary because so many cities have absurd, even idiotic regulations that prevent any progress in kitchen comfort. To illustrate: New York has an antiquated regulation that dates back to the days of witchcraft prohibiting connecting the oven flue of any gas stove to a building flue because the products of combustion might get back into the room! Can you beat it? Can you even approximate it? The results of such a rule is that nobody uses a stove any more than is absolutely necessary.

A sustained cooperative movement as suggested ought to be productive of improved cooking comfort and in-

creased wheat consumption without affecting consumption of factory-baked goods. At the present time, the A.G.A. stove is the only near approach to a solution of the problem, but this stove is too large and too expensive for the average home.

Follies of Farm Alcohol

SOME of the bright boys who are going to revolutionize the agriculture of the land have proposed to convert grain into sugar, or else use domestic sugar directly, then ferment it, distill off the alcohol, and save the yeast which is to be fed to cattle. In theory the idea is to get motor fuel and feed from the same grain—obtain double use as it were.

The idea is swell, only it happens that one cannot get both yeast and alcohol from a fermented mash. One or the other can be obtained, but not both.

And when one considers the heat balance in alcohol manufacture, the picture is very sad. Usually the bright boys fail to work it out, but instead they talk about the virtue of conservation of petroleum products. Unless an advocate of farm alcohol is thoroughly versed in the distilling business, he may overlook the fact that to produce alcohol requires rather large quantities of heat for mashing, malting, cooking and distilling.

To produce the alcohol potentially available from a bushel (48 lb.) of corn, requires an expenditure of 340,000 B.t.u. in the distillery. But the 2.36 gal. of alcohol obtainable from a bushel of corn has a heat value of only 199,000 B.t.u. Worse yet, a bushel of dry corn has a potential heat value of 359,000 B.t.u. if it is burned as ordinary fuel. It takes about 12 lb. of coal to produce 6 lb. of alcohol besides the corn.

So the bright boys would take a substance having 359,000 B.t.u., spend 340,000 B.t.u. more on it and get 199,000 B.t.u. available in the form of alcohol.

Not so hot!

CONSUMER CRUSADER

Dr. Walton H. Hamilton has made a pretty good start toward making life miserable for a lot of manufacturers and processors. No sooner was he named head of the NRA consumer division than he started campaigning for labeling and merchandising standards. And along with that he wants to look into price structures.

Antisepsis by Irradiated Sugar

IN SOME manner, unexplained as yet, many carbohydrates, notably the sugars, can be altered by exposure to ultra-violet irradiation (2537 Angstrom units) and thereby acquire certain antiseptic properties. To I. H. Blank and William Arnold of Harvard University goes the credit for this discovery which was reported at a scientific meeting at Massachusetts Institute of Technology in the summer.

Judging by the treatment accorded the story in the daily press, there is much popular interest in this discovery and a certain amount of speculation as to its possible practical application. We confess that we, too, wondered if this might be a clue to a new method of food preservation. But a study of the manuscript, recently loaned to us by the authors, shows: that the amounts of sugar that were irradiated are rather small, being 10 cc. of a 1 per cent solution; that the energy input was very high (47 ergs per sq.mm. per second during a one-hour period); and that something of unknown composition is formed from the carbohydrates that has a definitely adverse effect upon the growth of *B. subtilis*.

From the point of view of those who are conjecturing upon its technical possibilities in food manufacture, there are many questions that will need to be answered, such as:

1. What is the inhibitory substance formed?
2. Is this substance effective upon all forms of spoilage bacteria?
3. What is its flavor?
4. What is the effect of irradiation on other food constituents, especially their flavor?
5. What is the effect of the antiseptic substance formed on animals and human beings?
6. Is it a substance that puts the food outside the various food laws?
7. Is the cost of producing antisepsis in this manner within the range of economic possibility?

If all the answers to the foregoing questions were known and were favorable, it requires but little imagination to foresee what a useful tool irradiation of sugar might be.

Solution of Dairy Troubles

MOST of the problems of the dairy industry, including that of the producer, would be eliminated if everybody in the United States were to drink more milk this year to the extent of 34 lb. per capita above 1934 consumption. Of course, if the milk were used in some other way and equivalent in amount, the problem would be solved equally well.

Per capita consumption of milk runs around 900 lb. per year, the largest single item of food in our dietary. Hence an increase of 34 lb. per capita would not mean very much more milk per person, when spread out over a twelve months' period.

Fears have been expressed by the U.S. Department of Agriculture that many would-be consumers of milk may suffer a permanent loss of appetite through the effects of the present price structure on fluid milk.

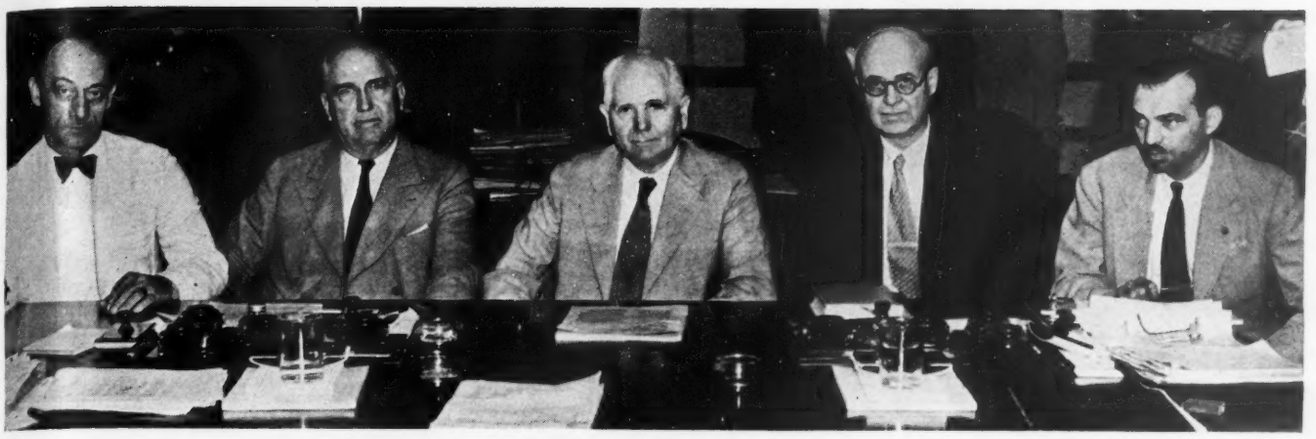
Decomposed Cream

A RECENT announcement of the condemnation and destruction of 200 seizures of decomposed cream in the latter part of 1934 appears to FOOD INDUSTRIES as a commendable activity by the Food and Drug Administration. In the notices of judgment, the libels ran all the way from nearly "decomposed" to "moldy, rancid, putrid, filthy and decomposed."

To strike at the root of an evil is a very sure way to prevent further repetition. That there is a market for decomposed cream is a disgrace to the industry. It is to be hoped that there may be no need of further wholesale condemnations.

Fruit-Milk Problems

AS FAR AS WE KNOW, there is no such thing as a fruit juice that is neutral with respect to acidity. This statement is sponsored by an



THE FTC IN PERSON

Food manufacturers likely will hear a lot about the activities of these men in the coming months. They make up the Federal Trade Commission, which was authorized by Congress to make a $150,000 investigation of the food industries. The Commission is ready to go, having been brought up to full strength by the appointment of R. E. Freer (right), Cincinnati attorney, to succeed J. M. Landis, now in SEC. The other commissioners are, left to right, Ferguson, March, Davis and Ayres.

inquiry about the possibility of a sterilized fruit-milk beverage.

To heat a mixture of milk and fruit juice to about 212 deg. F., will probably result in acid coagulation of the casein, yet to neutralize the fruit juice in order to prevent such a coagulation, would remove most of its characteristic flavors. Hence we are rather dubious of the feasibility of the sterilized fruit-milk beverage.

It seems likely, however, that a fruit-milk could be made and merchandized, either refrigerated or frozen just as many dairy companies are now supplying chocolate- and cocoa-milk today.

Consumers' Counsel on Over-Run

THOSE unnamed editors who put out the *Consumers Guide* for AAA are beginning to be more accurate, for which all food manufacturers may be thankful. One is never sure whether their misstatements are purposely inaccurate or merely the result of ignorance.

A footnote on page 5, July 22, 1935, *Consumers Guide*, takes back an earlier misstatement: "In reporting in our June 24 issue an investigation of eight ice creams sold in St. Paul, made at the instance of the county consumer counsel in that city, we incorrectly stated that specifications for government purchases of ice cream called for no more than 50 per cent over-run. The correct figure is 100 per cent over-run, which means about 50 per cent air."

It would be more gratifying had they developed the idea further and pointed out that several of the most successful ice cream manufacturers in the United States have standardized on 80 per cent over-run, because long experience has shown that this over-run gives a product that has the greatest consumption, other factors being equal.

What About Soy Bean Products?

EVEN the appearance of evil must be avoided in the production and labeling of foods. Manufacturers can accept this theory and cooperate in its application most cordially with the food and drug administration. But some are likely to think that proper zeal and protection of the public has gone altogether too far in some of the recent work of the government. Clearly there is need for a conference to discuss how proper restraint on food coloring may be exercised without interfering with real progress. Such a conference is particularly important just now with reference to the use of the newer soy bean products.

Washington announced that the presence of soya flour in macaroni, spaghetti, noodles, and similar products, constitutes adulteration. And a press release, dated June 14, said it is "a form of adulteration which no form of labeling can correct." With that statement, probably drafted by some over-enthusiastic press agent, we differ on the ground of law and common sense.

If a soy bean product of this sort is wholesome, and is so labeled to show that it is not merely common noodles faked to look like rich egg noodles because of color, there is no ground for criticizing it. Furthermore, some of the Department of Agriculture's staff are pushing the idea of using soya flour in foodstuffs. Soy beans can and should be used in foodstuffs where they confer added values or added nutrition. They add an element of novelty which is something desired in the trade, and they add a dietary variety which is desirable on the best dinner tables.

Proponents of these new products should stand by their guns that they are proper, useful, desirable and we hope profitable products of the food business. Mislabeling to avoid mere deception of the housewife should, and undoubtedly will, be prevented by the diligence of official Washington. But there is a large area of successful cooperation still open within the limits set on the one side by progress and the limits set on the other side by improper deceptive labels. Both parties had better go into this middle ground and stay there.

Soy Beans in Trouble

SEIZURE of 37 lots of macaroni products last May was unofficially reported by Food and Drug Administration. Much of it was made with hard wheat flour artificially colored with soy bean flour that in turn had been colored by turmeric. The colored soya flour looks like powdered egg yolk. One concern, now in the toils of the law, has purchased and apparently used enough soya flour to color about 6,000,000 lb. of product.

It is feared by the friends of the soy bean that its use in such a connection will give it a black eye. And we say to the promoters of soy bean products as adulterants that they had better study what happened to unbleached palm oil in margarine manufacture. It was really too bad.

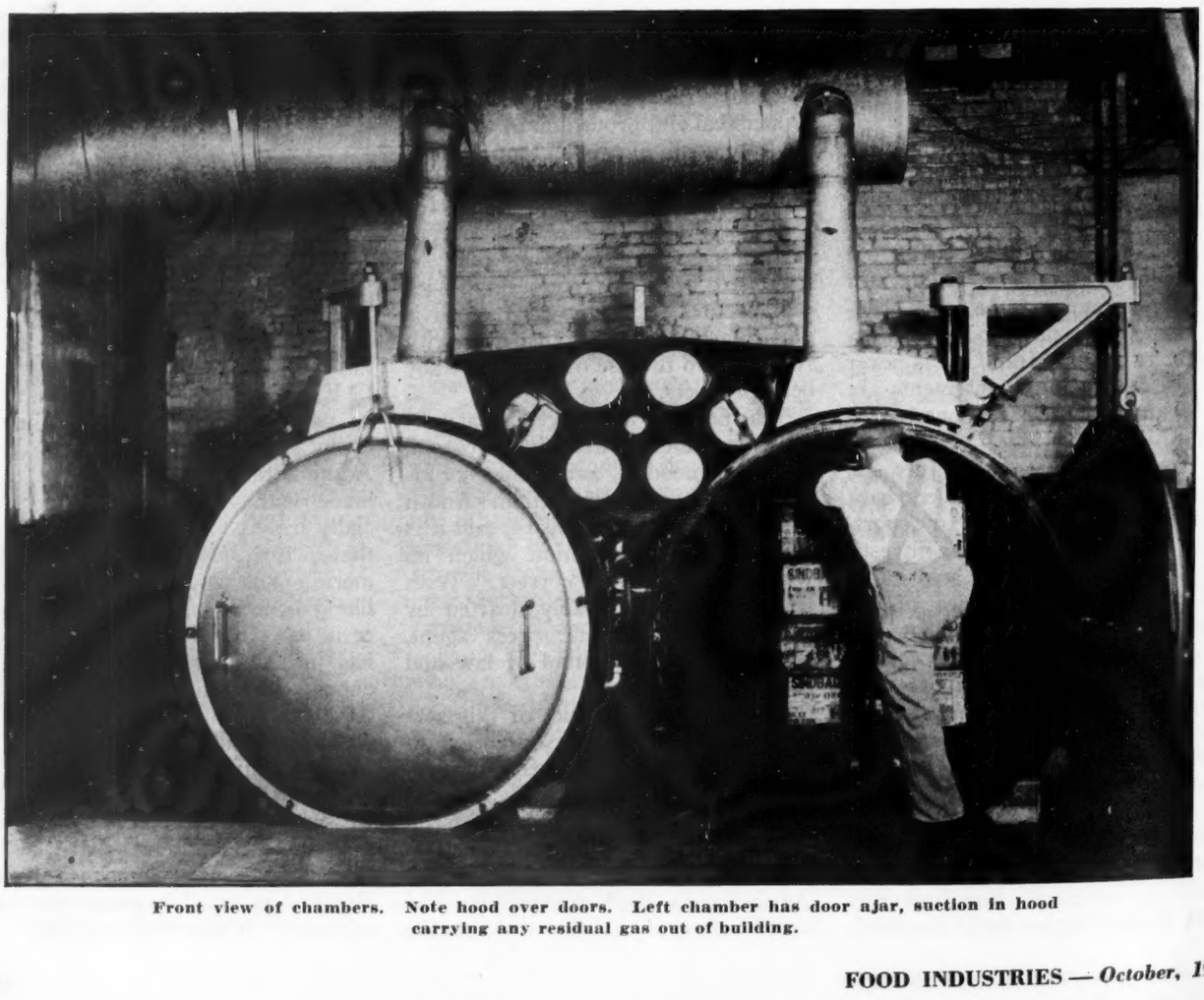
Fumigating Foods With HCN Gas

By OTTO T. LORENZ
The W. H. Marvin Co., Urbana, Ohio

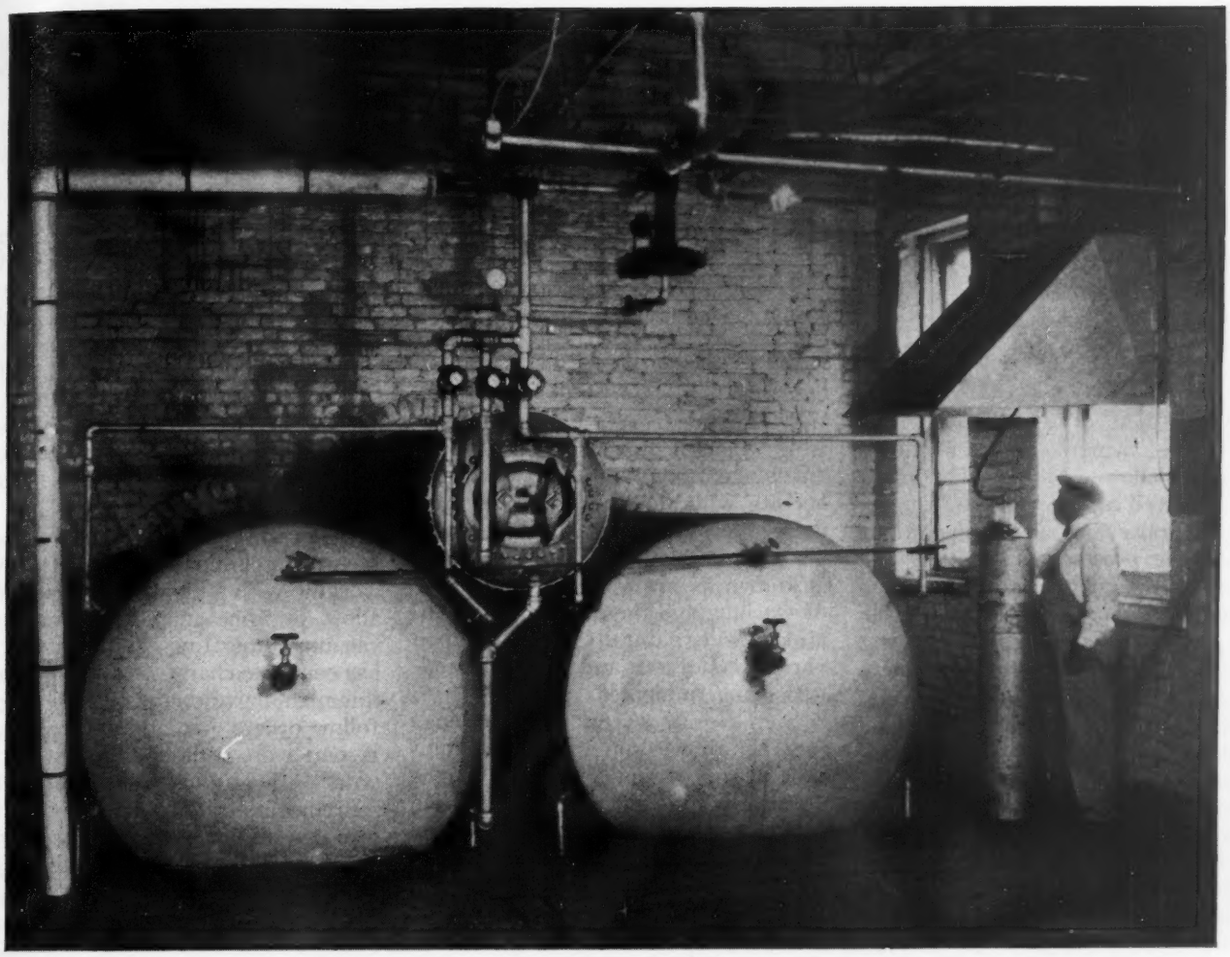
THE United States Department of Agriculture, and many who have acquainted themselves with it, have recommended HCN as one of the most effective of fumigating gases.* This is particularly true in both space and vacuum fumigation, as our experiences have verified.

For the past 4½ years, we have resorted to vacuum fumigation of all our products as the most effective means of insect control. Among the food products used in our manufacture and packaging are dates, currants, raisins, nut-meats, flour and mixtures of these. In the case of imported dried fruits such as dates and currants, insect infestation presents quite a problem, and here vacuum fumigation is the only effective means of killing these insects. This method of control must be quick, effective and inexpensive. To keep food products clean and wholesome, infestation by insects must obviously be kept at a minimum.

In our work along this line, we have used several of the non-toxic commercial fumigating gases. These gases were used prior to our use of liquid HCN for our vacuum chambers. They were effective in controlling insects such as the Mediterranean flour moth and the Indian meal moth; but during the Fall of 1933 we were confronted with an entirely new problem in insect control. Our new crop dates imported from Arabia were heavily infested with the larvae of the



Front view of chambers. Note hood over doors. Left chamber has door ajar, suction in hood carrying any residual gas out of building.



Rear view of vacuum tanks showing hood mounted over gas cylinder and measuring apparatus. Operator about to measure liquid HCN into glass measuring receptacle. (Small tank perched on two large tanks is accumulator chamber formerly used with gases under high pressure. Not necessary with HCN.)

fig moth. Two of the most popular commercial fumigating gases proved to be ineffective against this insect. With these gases we had used 22½ lb. of the gas to a 480 cu.ft. vacuum chamber and the time for fumigation was two and one-half hours. Our control was run by putting insects in a small glass tube and sinking this tube to the approximate center of a 70-lb. case of dates. This procedure would tell us what depth of penetration we were getting. To see how effective these gases were against the fig moth without determining penetration, the larvae of the fig moth was enclosed in a test tube loosely covered with a cloth to prevent the escape of the insect and laid out in the open inside the fumigating chamber.

Dosages up to 30 lb. of these same gases and a time up to 56 hours proved ineffective. Next we tried HCN. Our experiments with HCN were first performed in our laboratory to determine lethal dosages for this particular insect. In time we found that HCN was very effective in killing all stages of the insect. This conclusion, however, was not reached until after incubation proved that all stages of the insect were lifeless. This was all the information that we needed at the time. The all-important thing was to kill. Penetration and compensation for adsorption proved secondary. We now use eight ounces of gas to 480 cu.ft. of space and a time of two hours.

AS far as the technical division was concerned, our problem was solved. The executives of our concern, however, were very reluctant to use the gas, because of the fact that HCN possesses such highly toxic properties, and were much concerned because a new safety problem in the nature of a personnel hazard might be entailed in its use.

We had the effective gas; and, of a necessity, to use this gas, we had to eliminate all possibility of hazard. Soon we found that a thorough understanding of the properties of HCN, with a due regard for its high toxicity, and a methodical and systematic technic in the operation of the setup is by far the best safety measure.

Liquid HCN boils at approximately 80 deg. F and, at normal conditions for fumigating, it liberates HCN gas very readily. As a liquid in cylin-

*The U. S. Department of Agriculture has recommended HCN in the following bulletins:

The Cheese Skipper as a Pest in Cured Meats, U. S. Dept. of Agriculture Department Bulletin No. 1453, January, 1927, by Perez Simmons, Associate Entomologist.

The Tobacco Beetle, an Important Pest in Tobacco Products, U. S. Dept. of Agriculture Bulletin No. 737, by G. A. Runner, Entomological Assistant, U. S. Department of Agriculture, Bureau of Entomology.

Weevils in Beans and Peas, U. S. Department of Agriculture Farmers' Bulletin No. 1275, by E. A. Back, Entomologist, U. S. Department of Agriculture, Bureau of Entomology.

The Tobacco Beetle and How to Prevent Damage by it, U. S. Dept. of Agriculture Farmers' Bulletin No. 846, 1922, by G. A. Runner, Entomologist Assistant.

HCN Gas Against Household Insects, U. S. Dept. of Agriculture Farmers' Bulletin No. 699, April 5, 1916, by L. O. Howard, Entomologist and Chief of Bureau and C. H. Popenoe, Entomological Assistant, U. S. Department of Agriculture, Bureau of Entomology.

drical containers, it is under slight pressure and is displaced by air with a hand pump, or an air pressure line through a pipe, directly into the vacuum chambers. No decompressing chamber or accumulating chamber is necessary as is the case with gases under high pressure. A very convenient way to measure out the liquid is to use a calibrated gas cylinder mounted in a brass receptacle which can be readily inserted into the HCN cylinder head.

A VACUUM of 25 in. is created in the vacuum chamber before any gas is allowed to flow. The liquid is introduced at the rear of the vacuum chamber and all manipulations during the process of admitting the gas from the cylinder to the vacuum chamber are done under a large hood. Our procedure is in steps as follows:

Step No. 1. Evacuating the chamber to 25 in. of vacuum.

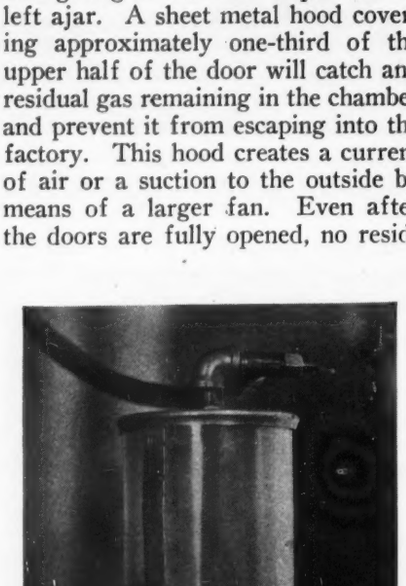
Step No. 2. Measuring the liquid in the glass receptacle, which can be followed very simply in a methodical manner. At the beginning of this step a large suction fan in the hood is set into operation. Nothing is done under pressure except for the slight pressure that is pumped into the liquid HCN cylinder to displace HCN into the glass receptacle. A vent valve and a nozzle on top of the glass receptacle are connected with a rubber tube which terminates at the suction fan. In the absence of a hood, this rubber hose can be run outside of the building. This valve relieves the air pressure inside of the receptacle as the liquid HCN is being forced in. After the desired volume of liquid is forced into the glass measuring container, the cylinder head valve is closed and the vent valve on top of the container is also closed.

Step No. 3. Admitting the gas to the fumigating chamber. All valves are closed before step 3 takes place. The valve in the gas line at the vacuum tank is opened, after which a needle valve at the base of the glass receptacle is opened to allow the liquid to flow from the glass container very slowly into the vacuum tank. The liquid is allowed to flow slowly to insure its perfect gasification.

Step No. 4. After all the liquid has been drawn from the glass vessel into the fumigating chamber, and with the two valves in the gas line still remaining open, the vent valve on top of the glass measuring chamber is opened and air allowed to wash through the apparatus and gas line for about a minute. All of the gas is now in the vacuum chamber and none remains in the line. All valves are again closed. The time of fumigation is two hours. During Step 4, the vacuum will drop an inch or two.

Step No. 5. At the end of two hours, the vacuum is pumped from 24 up to 27 in. Air is admitted until normal conditions exist. (No vacuum.) Another vacuum of 27 in. is pumped, after which it is again dropped down to about 4 in., at which time a breaker valve in the rear of the tank is opened slightly (pump operating when vacuum is dropped). At this stage, the pump is allowed to operate with the breaker valve partially open at the rear of the tank. This circulates the air in the tank and is known as air washing. The time of washing and the number of evacuations will naturally depend upon various conditions and kinds of products being fumigated.

Step No. 6. After two pumpings to 27 in. of vacuum and several minutes of air washing, the door of the fumigating chamber is opened and left ajar. A sheet metal hood covering approximately one-third of the upper half of the door will catch any residual gas remaining in the chamber and prevent it from escaping into the factory. This hood creates a current of air or a suction to the outside by means of a larger fan. Even after the doors are fully opened, no residual gas will get into the factory while the hood is creating a suction. This residual gas is caused by adsorption upon the fumigated product, and in a very short time will be completely liberated from the food product.



Close-up of glass measuring apparatus. The figures on notched scale read in ounces of liquid HCN. Note vent valve on top of measuring chamber connected with rubber hose which terminates at ventilator fan. Lower valve admits liquid gas directly to vacuum chamber.

ONE safety measure for protecting the workers in the factory, and a general sort of precaution, is to have the exhaust from the vacuum pump piped to the top of the roof and extend two or three feet above it. This eliminates any possibility of the formation of gas pockets or the blowing of the exhaust gas by winds or currents of air back to the factory through open windows.

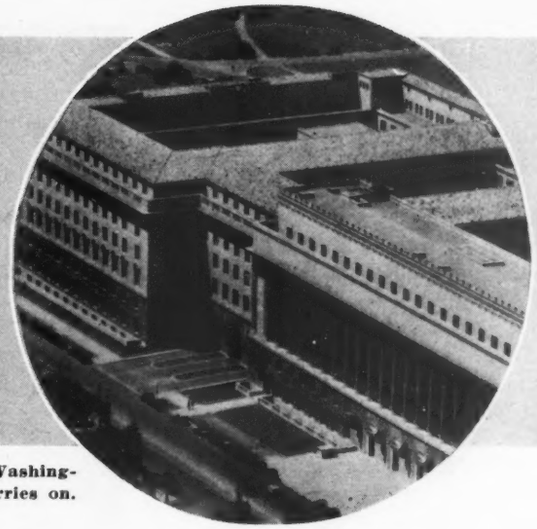
Strict discipline is an important factor in eliminating hazards when working with a highly toxic gas. We allow but one man to operate our vacuum fumigating equipment and he has complete charge of it. We picked this man above others because he can follow orders. In addition to this he is one who, although not afraid to work with a toxic gas, yet realizes the extreme importance of caution. He also knows that his position carries responsibilities inasmuch as the safety of his fellow workers depends upon his efficiency in the operation of his charge.

No employee, nor any executive, is permitted anywhere in the vicinity of our fumigating equipment during the process of fumigation. Most accidents of any kind can be eliminated by strict discipline. The operator is cautioned that if at any time something is not working properly all operations are to cease at that particular moment by closing all valves, and he is not to go on until his superior (who has and should have a thorough understanding of vacuum fumigation) is consulted.

We have used liquid HCN continuously in vacuum fumigation for the past two years and a half, and liquid HCN for general fumigation for the past four years. Thus far, through strict adherence to discipline and a careful and thorough understanding of our equipment, we have had no reason to consider the use of HCN more hazardous than any other fumigant.

Much work has been done in connection with HCN fumigation and its effect upon foodstuffs. We have a complete bibliography pertaining to various commodities fumigated with HCN and nowhere have we found any toxic effect resulting from fumigation with HCN.

Where Does Industry Go From Here?



Department of Commerce building in Washington, D. C., where what is left of NRA carries on.

IN EARLY summer came the crack-down by the U.S. Supreme Court on the business-government partnership idea. The world was watching this experiment, which was a compromise between the Fascist control of business enterprises in Italy and the *laissez faire* methods of the old days in this country.

The government has just published a report covering more than 100 pages, the first of a series of summarized reports on the two years of experiment. Its title is "Code-Sponsoring Trade Associations." It gives a bit of information on each of the over 850 industries which had come to Washington in an effort to lessen cut-throat competition in each industry, by the National Recovery Administration, the Agricultural Adjustment Administration, and the Federal Alcohol Control Administration. Several thousand trade groups had assisted in industrial groups in an endeavor to raise standards of labor conditions and competitive practices.

The survey mentioned was prepared by the Trade Association Section of the U.S. Department of Commerce. For the first time there is presented an alphabetical list of practically all industries in this country as to relative importance, according to number of employees, from the smoking pipes business to the construction industry. The survey brings out for the first time some startling statistical data. It shows how many codified industries there were in each field of business—95 in the field of textiles, 14 rubber industry codes, 66 food, and so on. "Concentration of control" is mentioned in an unusual form —that twelve of the codified industries were so huge that they covered under code provisions some ten million employees, or approximately *one-half* of the entire number covered by NRA, AAA, and FACA. (It has been unofficially estimated that the program endeavored to include over 100 billion dollars of America's production, manufacturing, distribution, and business services in 1934; about one-third of which was manufacturing.) The survey is authority for the fact that these twelve industries also include almost two-thirds of all firms the Federal Government endeavored to bring into its partnership; about "2,500,000 establishments in the fields of production, manufacturing, distribution, and business services."

THIS report of the Commerce Department is serving as a basis for the series of reports now being written by the crippled NRA staff. About 3,000 still remain of its 5,000 employees, a fact that is being criticized, especially by some Republican senators. NRA's reply is that a thousand or so people are needed to write an adequate history of those epochal two years between the summers of 1933 and 1935, and to prepare for the public an official interpretation of it. Most of this work is at present under the guidance of Leon Marshall, a widely known economist, who before coming to the NRA had been affiliated with the American Federation of Labor and Johns Hopkins University.

In addition to the giving of summarized information on more than 850 industries, the survey includes the names and addresses of approximately 1,000 leading trade associations. It names about 1,000 executives of associations which sponsored codes or who were secretaries of the code authorities, some of which are now having difficulty in winding up their affairs and distributing the funds to those who had contributed. Upwards of $50,000,000 was contributed by America's business firms in the last fiscal year to maintain the same 800 code authorities; not including the running cost of NRA, which approximated about a million dollars a month.

C. Judkins, author of the book and head of the trade association section of NRA, stresses the fact that it is now "up to business groups" to put their own houses in order, since the nine Supreme Court justices unanimously decreed that the Federal Government's hands are tied, except as to interstate commerce:

> With the adjustments which have been made necessary by the Supreme Court decision on May 27 in the NRA-Schechter case, the leading trade associations in the United States once again must assume full responsibility for cooperative activities within their respective trades.

It is becoming more and more generally recognized that although the codes of fair competition of the NRA, AAA, and FACA are no longer operative, they contain agreed-upon provisions of fair competition and labor relations which at least always will be of value to those studying any industry which had been under a code.

National headquarters of industries, trades, and services given in "Code-Sponsoring Trade Associations" were located as follows: 409, New York; 114, Illinois; 93, Washington, D. C.; 69, Ohio; 52, Pennsylvania; 28, Massachusetts; 21, Michigan.

Selecting a Refrigerating System

PART ONE

A discussion of the relative merits of brine, direct expansion and flooded ammonia systems in cold storage rooms

By L. A. RAMSEY
Engineering Division,
York Ice Machinery Corp., York, Pa.

In this compressor room of a medium-size

BROADLY speaking, any insulated room or rooms arranged with means for cooling, is a "cold storage." Therefore, a "cold storage" may vary from a small refrigerator in a restaurant or a meat market up to the largest cold storage warehouse of 5,000,000 cu.ft. capacity. From the smallest to the largest each one presents a specific problem which should be carefully considered when being designed.

The following are some of the considerations affecting the design of the refrigerating system for a cold storage:

1. How large is the storage to be?
2. Is it to handle only "high" temperature goods, or will it also handle "freezer" goods? What should be the percentage of freezer space?
3. Will it handle mainly one commodity, such as eggs, apples or butter?
4. What will be the approximate load factor of the plant—that is, what is the average yearly occupancy compared to its maximum?
5. Will the freezer rooms sometimes be required to store high temperature goods?
6. Is the plant to be a "short storage" or "long storage" plant?

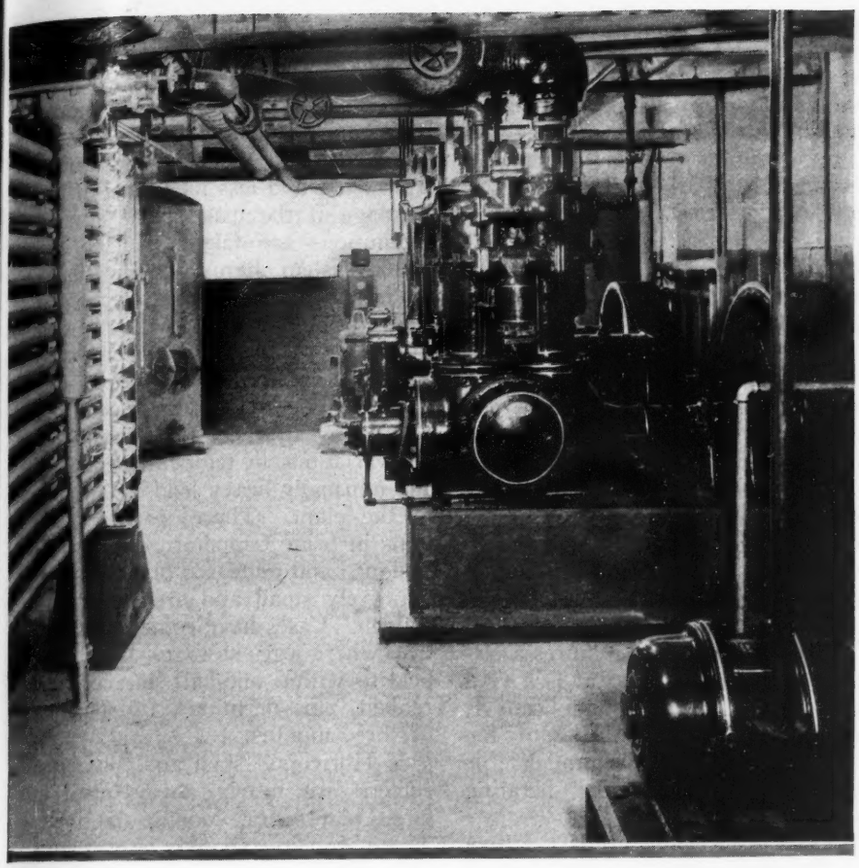
The new smaller storages, such as those in restaurants, meat markets, chain stores, etc., are at this time usually putting in direct expansion Freon, ammonia, or methyl chloride, using finned coils controlled by thermal expansion valves. The thermal expansion valves operate automatically to feed the proper amount of liquid refrigerant to the coils, the amount of the valve opening being controlled both by the coil pressure and the coil outlet temperature.

These small plants operate automatically and the amount of refrigerant fed to each coil is accurately controlled. The compressor is usually controlled by a thermostat located in the main refrigerator. There are other methods, but the foregoing is the most commonly used. In these plants there would be no justification for a brine system, because the system just described is the most simple and economical.

In somewhat larger plants, such as a chain store warehouse that handles a considerable quantity of lamb, quarters of beef, etc., as well as butter, eggs and vegetables, for distribution to chain grocery and meat markets, there is no question but that the most satisfactory, economical and care-free plant is an automatic flooded ammonia system. A plant of this kind of 10 to 35 tons refrigerating capacity will operate with a handy man inspecting it, occasionally during the daytime, but with the plant operating automatically 24 hours a day.

The flooded system works out well and is not too large or complicated in such cases. Usually the liquid ammonia, after leaving the condenser, goes to a high pressure float regulator or drainer, which automatically keeps the liquid drained from the condenser, but does not permit any high pressure gas to pass owing to the action of the float-operated valve. From the drainer the liquid passes to a considerable percentage of the coil clusters in series-parallel feed until it reaches the surge drum, where the liquid is separated from the ammonia gas. The gas passes on to the compressor through the suction line. From the surge drum a number of coils are fed by gravity, the liquid from the surge drum passing down to the lower part of the coils, and the return from the coils going back to the same surge drum where any liquid will again be separated and the dry gas only goes to the compressor.

In this same plant, another room



storage plant are two V-belt driven ammonia compressors and a double-pipe condenser.

may be operated on the flooded system by taking a high pressure liquid line from the high pressure side of the drainer to a low pressure float regulator attached to a surge drum. The liquid flows down into the coils and a constant liquid level is held by means of the low pressure float, so the coils are always operating flooded.

Such a plant may also have a freezer room for poultry, operating at, say, 10 deg. F., and in this case it is recommended that a small automatic compressor be used to operate the freezer only. This machine would automatically start and stop as the temperature varied in the freezer room. This freezer would operate on the flooded ammonia system, having a high pressure float drainer to remove the liquid from the condenser and discharge it to the surge drum in the freezer room. The liquid flows by gravity to the coils, where it absorbs heat and is evaporated.

AT THIS point it is probably advisable to explain why in relatively small- or medium-size plants, as so far described, it is not economical to use the brine circulation method.

In the direct expansion and flooded coil methods, the ammonia or other refrigerant is in the room coils. The heat, which must be offset by refrigeration, comes from the heat leakage through the floor, walls and ceiling, from the meat or produce being cooled, and from people, lights, motors or other sources of heat that may be in the room. This heat flows to the cooling pipes and through them to the refrigerant inside. Heat flows by the laws of nature from a warm body to a colder body—this is as natural as water flowing down hill. As the refrigerant absorbs this heat, it boils or vaporizes, giving off its gas which travels through the pipes to the end of the coil.

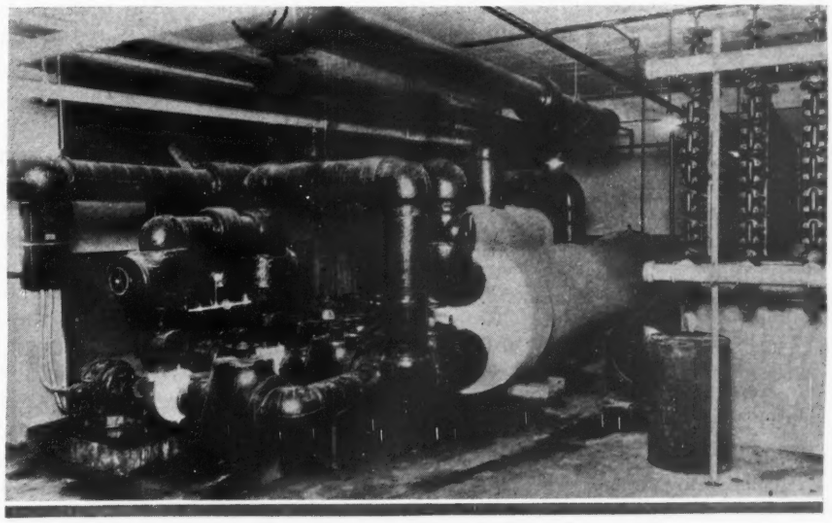
When brine circulation is used, it is necessary to add another step in the cycle. This is one reason for its increased operating cost over the direct expansion system.

Calcium chloride brine should be used and kept at such concentrations that it will not freeze at any of the ordinary ammonia pressures likely to be encountered.

It is a definite physical law that a closed vessel partially filled with liquid refrigerant will have a certain pressure that depends on the temperature of the liquid in the vessel. If the temperature is raised, the pressure increases and vice versa.

The liquid refrigerant in the coils is at, or very close, the temperature which corresponds to the suction pressure at the compressor. There is a small drop in pressure between the coils and the compressor, especially if the distance is several hundred feet or the suction main is too small. However, for our purpose, this small difference can be neglected.

The transfer of heat from the produce to the refrigerant in the coils



This plant uses brine as the cooling medium, the brine pumps, mains and coolers being shown at the left, while at the right are the ammonia receiver and the double-pipe ammonia condenser.

depends on: The rate of heat transfer between the pipe surface and the air; the amount of cooling surface in the room; and the average temperature difference between the air in the room, and the refrigerant in the coils.

Assuming the cold storage room temperature is 35 deg. F. and the ammonia temperature in the coils is 10 deg. F. (which corresponds to 23.8 lb. suction gage pressure), we would have a temperature difference of 35 — 10 = 25 deg. F.

To use brine circulation, it is necessary that the brine be cooled in a brine cooler, which is usually located near the refrigerating machine. Assuming the same refrigerant temperature was used as above (10 deg. F.) in the brine cooler, it would be usual to have about 10 deg. F. temperature difference between the refrigerant temperature and the brine temperature. The average brine temperature would then be 10 + 10 = 20 deg. F. The room is still to be 35 deg. F. so now the temperature difference between the air in the room and the brine in the pipe coils is 35 — 20 = 15 deg. F. Let us assume the rate of heat transfer remains the same whether brine or ammonia is used.

It will be noted now that the temperature difference between the air and the refrigerating medium in the coils has been decreased from 25 to 15 deg. F., consequently the amount of brine coil surface required to do the same refrigerating duty will have to be increased in the ratio of 15 to 25. This means if 1,500 ft. of coils were required for direct expansion, then 2,500 ft. will be needed for brine circulation.

WHAT is actually done in practice is to lower the suction pressure to, say, 19.6 lb., corresponding to 5 deg. F., and bring the brine temperature down to 15 deg. F. The temperature difference between the air in the room and the brine in the coils would then be 35 — 15 = 20 deg. F., and the amount of pipe required could be reduced from 2,500 to 2,000 ft.

The brine system in the case mentioned is penalized for the following reasons:

1. The compressor must operate at 19.6 lb. suction pressure instead of 23.8 lb. The compressor must be approximately 12 per cent larger to handle the same tonnage or refrigerating duty at the lower suction pressure. This increases the first cost of the compressor, also its motor and condenser. Roughly, the increase in cost of power, owing to the lower suction for the compressor only, amounts to about 2.8 cents per ton of refrigeration per day when the power rate is $0.01 per kw.-hr. for a large plant, or 7 cents when the power rate is $0.02½, which would apply to a medium-size plant. For a smaller plant the cost is still greater.

2. The brine-system cost is greater because of the larger amount of pipe coils necessary in the cold storage rooms. As previously shown, the amount of pipe was increased from 1,500 to 2,000 ft. The cost increase is not in this proportion, however, as the brine coils, fittings, valves, etc., are somewhat less costly than for ammonia. Also, no surge drums or float regulators are required for the brine coils.

3. The brine system requires a circulating pump, and since it is a vital part of the plant, a duplicate is usually installed. The cost of the power required for pumping the brine must be added to the operating charges.

4. The brine mains are larger than the ammonia mains, so the cost of the brine mains and pipe covering for them is greater than for ammonia.

5. The brine system requires more engine room space, for the larger compressors, the brine coolers and brine pumps.

HOWEVER, some of the advantages of a brine system over ammonia for large plants are:

1. With a properly designed three-pipe balanced brine system with a combined air vent and balancing tank located at the high point of the system, the flow of brine through the numerous coils is very easily regulated. In the large plants a warehouse man usually does the manipulating of the valves when necessary to obtain the conditions best suited for the particular commodity being stored. It is the usual practice to open the inlet valves to the coils wide and throttle the return valves as required. This insures the coils being properly filled.

2. Brine in the coils is less hazardous than when ammonia is used. If there is a brine leak it may damage the goods at the location of the leak; but in the case of an ammonia leak, if at all serious, the ammonia may cause considerable damage to the goods in the entire room or section of the plant.

3. If refrigeration is to be supplied to a street line and refrigeration sold to nearby or distant tenants, the brine system should be used by all means. It is more readily metered, easily taken care of, there is less danger from leaks and less likelihood of line stoppage if the usual brine strainer precautions are taken. In an ammonia system there is the possibility of impurities and oil collecting at trapped points and there may be considerable difficulty in their removal.

4. The volume of brine in a large brine system is considerable, and this acts as a "flywheel" to smooth out the variations in temperature during any unusually heavy load on one part of the plant. Therefore the variations in brine temperature in a well-designed and regulated plant are comparatively small and are never very sudden. Cases have come to our notice where egg storages have been held to within one-half degree, Fahrenheit, plus or minus, for a period of three months.

5. Horizontal shell and tube brine coolers are nearly always used in large plants for cooling the brine. These coolers should be operated with a low pressure float regulator. This regulator holds an exact liquid level in the cooler. The regulator admits more liquid to the shell as the ammonia is boiled off; in other words, it keeps the liquid ammonia at the maximum permissible level, thus keeping the tubes wetted and obtaining the maximum heat transfer through the tubes. By preventing an excess of liquid ammonia from entering the shell, dangerous liquid slop-overs to the compressor are eliminated.

6. It is essential to keep the relative humidity at about 85 to 90 per cent for egg storage, for instance, and it is easier to keep the humidity up if brine or ammonia at 15 deg. F. is circulated instead of ammonia at 5 deg. F. The colder the refrigerating medium in the coils, the more rapid the accumulation of frost on the coils, with the consequent reduction in the per cent relative humidity of the air in the room. The lower the humidity the more the goods will dry out and shrink while in storage.

The freezer space in a large cold storage plant is usually from 25 to 30 per cent of the total, although this may go as high as 40 per cent in special cases.

Part II of this article will appear in a forthcoming issue of FOOD INDUSTRIES.

How They Buy Food

Surprisingly, the poor earn less but spend more for their food than next higher income group, and almost as much as the well-to-do spend, as revealed by this survey

By HARRISON YOUNG BINGHAM

Evanston, Ill.

A TOTAL of 100 housewives were recently interviewed in the Chicago area with the purpose of determining the dollar volume of grocery expenditures per week and the type of grocery items used by consumers in each of the four main income brackets — top wealth, upper middle class, lower middle class and poor. The total calls were evenly spread among these four divisions and the women were asked to keep a complete written account of all their grocery purchases for a period of one week, indicating each item purchased, the brand name, the amount spent and the store where the item was purchased in each case. They were also asked to indicate the number of persons in their families.

In computing the results of the investigation, expenditures in all families were figured against the total number of individuals in order to obtain the amount spent per week for each individual. This figure was then multiplied by 3.81, average number of individuals per family, exclusive of institutions and single individuals, based on 1930 census data. In this way, average expenditures for average-sized families were obtained in each of the four income levels so as to give a truer picture of the relationship between expenditures and food consumption in each area.

It was thus found that the average amount spent weekly, per family, is highest in the top wealth homes and drops gradually to the lower middle classes as was expected. Top wealth families spend on an average of $10.71 per week for groceries; upper middle class families, $9.60 per week; and lower middle class families, $8.91 per week. However, this steady decrease in dollar volume was distinctly upset when the expenditures of the average poor class families were computed. Here it was found that the average family spends $9.46 per week for groceries, which is approximately as much as is averaged by upper middle class families, and is considerably more than is averaged by the lower middle class.

AN examination of the detailed accounts of the women in the poor class homes reveals the factors which cause this surprising inconsistency. These women are apparently very unscientific buyers. First, they rarely take advantage of sales, for the prices quoted on their lists are, with few exceptions, top prices. Second, they buy only when they have both the need and the money, thus losing the savings that are possible when buying in quantity. Invariably they will buy one can of soup at 10c. instead of two cans for 18c., or one can of cleanser at 9c. instead of two for 15c. Third, these women, judging from their purchases, consume a great deal of meat in comparison to the women in the higher income brackets. Fourth, they enjoy good food and buy the quality, national brands, such as Pillsbury flour, Hills Bros. coffee and Old Dutch Cleanser quite consistently. Fifth, they like delicacies. One woman listed a dozen and one-half artichokes on her week's account.

Exactly 61.1 per cent of the women in the top wealth class buy three-fourths or more of their grocery items under national labels. In the upper middle class homes, the figure is practically the same, 60.5 per cent buy three-fourths or more of their grocery items under national labels. In the lower middle class homes, the percentage drops a little to 44.4 per cent. But, in the poor homes, the same inconsistency that was noticeable before again appears—58.0 per cent of the women buy their grocery items under national labels.

In order to have a clearer understanding of what the women in the four income brackets actually buy, and to see further evidence of the existing inconsistencies previously described, we have chosen the seventeen grocery items which appeared most frequently on all account lists and have determined how many families in each area buy these items under national brands and how many buy them under private brands. These seventeen items are, as follows: canned fruit, canned vegetables, soaps and soap flakes, hot and cold cereals, canned soups, cheeses, tomato and pineapple juices, condiments, sugar, canned fish, salad dressing, salt, macaroni and spaghetti, preserves, peanut butter, prepared desserts, gelatine.

IN THE top wealth homes, there is one item (salt) which the families appear to buy exclusively under national labels. There are ten items which these families appear to purchase more often under national labels than private labels. These items are soap, cereals, soups, cheese, condiments, sugar, spaghetti, peanut butter, prepared desserts, and gelatins. The remaining six items (canned fruit, fish, vegetables, fruit juices, salad dressing, and preserves) appear to be purchased by these families more often under private labels.

The status in the upper middle class homes of these seventeen types of grocery items is very similar to their status in the top wealth homes with the following exceptions: these women apparently buy two of the items exclusively under private labels —canned fish and preserves.

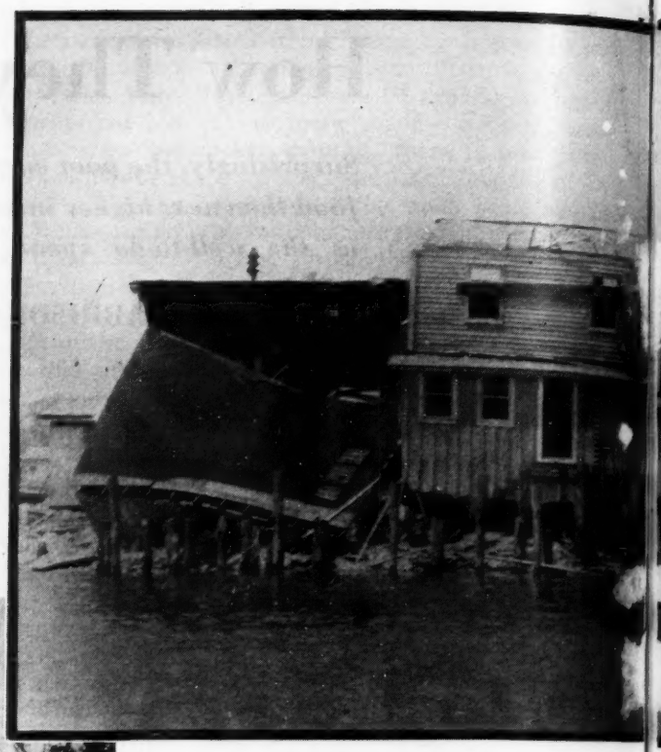
In the lower middle class homes there are four items which the families buy exclusively under private labels. These items are: canned vegetables, fruit juices, preserves, and peanut butter.

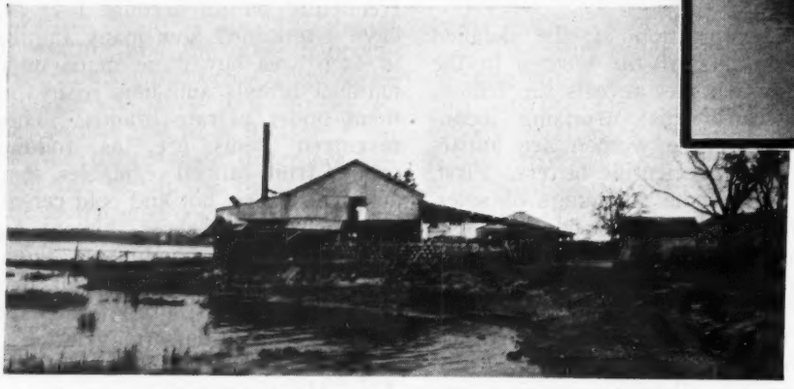
In the poorer homes, however, the women buy only one item exclusively under private label—soap.

Storms, Disaster, Wreckage

Waterside plants are especially vulnerable

By WAINWRIGHT EVANS
St. Michaels, Md.





This view was made after rebuilding. It looks much the same but the office is back over solid ground and underneath the dock is an enormously heavy concrete wall. Old machinery litters the sands under the water in the foreground.

THE FURY of the recent tropical hurricane that drove the steamship Dixie aground and laid waste to the Florida Keys is a reminder to those who operate food plants alongside deep water that precautions to prevent storm and tide damage are a sound investment.

Though not quite so destructive as the "Big Storm" of Aug. 11, 1933, which came from the Atlantic Ocean into Chesapeake Bay, this year's storm made its exit to the sea through that same region. The havoc created two years ago was not repeated in 1935, but what occurred in the "Big Storm" deserves recounting to enable others to foresee and possibly to correct the weak or vulnerable points.

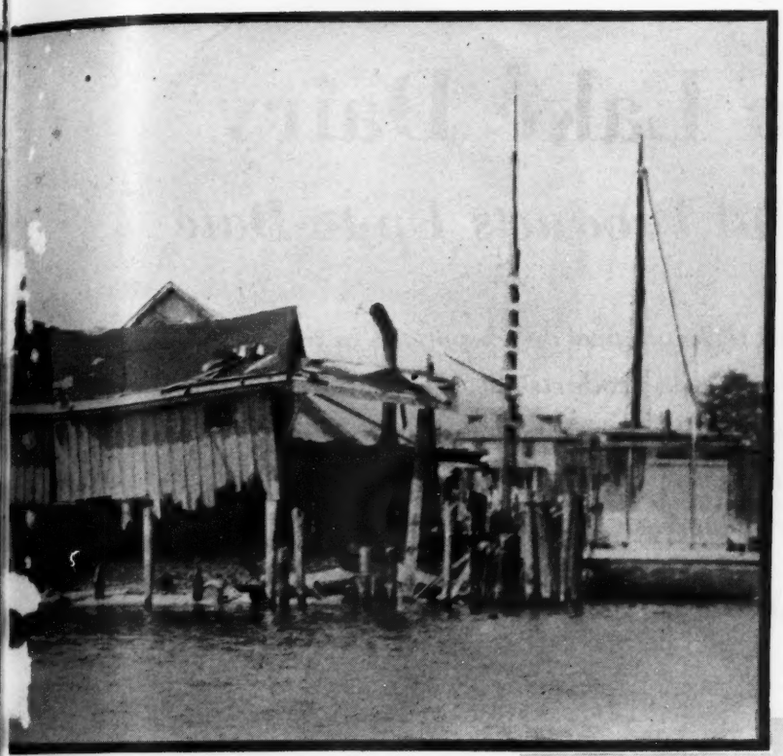
In the storm of '33, great damage occurred particularly on Tilghman's Island, Md.—a small body of land separated from the eastern shore of Chesapeake Bay by a strip of water about 50 ft. wide. To the south of this island is another very tiny island connected with Tilghman's Island by a pier 800 ft. long. On this diminutive spot was located the Tilghman Packing Co. and several other small sea food plants. On Tilghman's Island proper is the Tilghman Canning Co. Both concerns, owned by the Harrison family, suffered severe damage in 1933 but were rebuilt or repaired. But several other plants were completely obliterated and have never been rebuilt.

On the water side of the Tilghman Packing Company was a long dock that ran the length of the packing house. It was 100 ft. long by 15 ft. wide, and floored with heavy 3-in. planks. The under-structure of heavy piles was held together by bolted string-pieces on which rested the flooring. Fronting the water was a solid bulkhead of 8x8-in. piles. The space behind the bulkhead was filled solid with oyster shells. The layer of shell extended back under the wooden floor of the packing house, a distance of 20 ft. Still further back of this was a heavy concrete floor likewise resting on the layer of oyster shell. During the worst of the storm this layer of oyster shell proved to be a serious weakness.

The combination of hurricane and tide brought on what is known as a storm tide which finally went 2 ft. higher than the highest point on record. Waves forced their way around back of the piles of the bulkhead, bending them outward, one by one, and ripping them out of the mud like match sticks.

ALL of this happened about 2 o'clock in the afternoon when, in spite of the storm, the plant was still in operation. A great quantity of crabmeat, a rather costly raw material, was in various stages of process. The long dock on the water side began to sag and break up. There still remained a minimum of a half-hour of work to be done before the last of the crabmeat could be packed. It was a race between time and tide—literally.

Kenneth Harrison, the plant manager, realizing the danger, ran to the packing room and shouted to everybody to work like mad. Then he made for the little office upstairs, the remains of which can be seen in the large illustration. It projected out above the now vanishing dock, supported by wooden posts. If the dock collapsed, the office with its heavy iron safe containing all the records of the firm, was certain to go with it.



At low tide after the storm had subsided there was not much left of the Tilghman Packing Co. The timber across the windows of what was once the office was used to hold it from dropping into the bay. The safe was still inside. Note the boiler on the right.

Mute evidence of the force of the waves. A few days before this picture was taken a busy plant operated on this foundation, now only a rusting gas engine remains.

The Tilghman Canning Co. plant about two weeks after the storm. The fallen smokestack is still down. A huge chunk had been cut out of the shore in the foreground. In spite of the disaster this plant was able to finish its pack of the few tomatoes that survived the hurricane.

Mr. Harrison hastily gathered such books and other records as were most essential, dashed downstairs and stored them in a waiting truck. Then, while the last of the crabmeat was being rushed into the cans, the portion already packed was loaded onto the truck. Time was flying. It was now about 3 o'clock.

By that time all of the dock had given away before the racing tide. When the dock underneath the little office finally disappeared the office itself sagged down and hung crazily in mid-air, as shown above.

Next, the layer of oyster shell behind the bulkhead and under the wooden floor in the front part of the packing house was washed out by the waves and later driven forward into the packing room where it ultimately lay in a layer more than 2 ft. thick.

The wooden floor of the factory began to float up and down on the rising flood with no foundation of any kind under it.

Then things began to happen to the boiler which also was setting on a bed of oyster shell. The waves scooped out most of the shell and left the boiler there in mid-air suspended by the piping and one end that was still resting on solid ground. A 72x36-in. process kettle weighing 1,000 lb. began to float around. It banged against the boiler. That was the last straw. Everybody made a run for the truck which hastily headed for the 800-ft. long pier connecting the little island with the main island, to get out while it was still possible.

The tide was now up over the floor of the long pier. Its entire length was under water. But the truck made it, though the driving was ticklish. The board track was slippery and skiddy as a ballroom floor. The slightest pressure on the brakes would have skidded the truck and its 25 passengers over into deep water. Planks were bobbing up and down. The gale roared. Whole sections of the pier began to rise and fall with the heavy seas, but finally the truck completed the passage. And ten minutes afterwards the pier broke up completely and was driven ashore.

An old storehouse, standing on piles far out into the water, filled with cans, nets, boat equipment and machine-parts for both of the two concerns, sank into the water and disappeared.

AT the Tilghman Canning Company, located also on the water's edge but on the island proper, disaster also took place. On the shore, at what had always seemed to be a safe distance from the water, was stored 75 tons of coal. All of it disappeared! After the storm there was a hole where the coal had been lying that took 120 loads of earth, 3 tons to the load, to refill.

(Turn to page 514)

Franklin Lake Dairy

Keeps Plants and Products Up-to-Date

By keeping abreast of technological developments in the dairy field the market for its products was doubled during the past five years. Progressive modernization of plant and equipment has been necessary to handle profitably a 1,400 per cent increase in business since 1922

By JOHN I. DeKORTE
Manager of Production and Sanitation, Franklin Lake Dairy, Franklin Lakes, N. J.

FROM a daily production of 1,000 qt. of pasteurized milk to that of 14,000 qt. is the growth of Franklin Lake Dairy business since 1922. It is significant that more than half of this growth has been made during the past five years when many food manufacturing and processing companies were calling upon all their corporate resources just to hold their volume of business.

Throughout this period of growth there have been progressive expansion and modernization changes in the plant and plant equipment to make possible the processing and marketing of higher quality and a greater variety of milks with which to keep pace with changes in the consumer markets.

The latest physical unit to be added to this growing company is the 30x 60-ft. "Grade A" plant having a daily production capacity of more than 6,000 qt. It is a completely new structure to provide facilities for processing and bottling Grade A milk in compliance with the New Jersey Milk Control Board rulings and for handling pasteurized and irradiated Golden Guernsey milks.

Since the days of its humble beginning in 1910 as a distributor of 80 quarts of raw milk per day the dominant policy has been to keep equipment, plant, and products up-to-date technically as well as physically.

During the past thirteen years the business has been devoted almost exclusively to the wholesaling of pasteurized milk of both A and B grades. But always with an eye on new developments in dairy products.

With the introduction of vitamin D milk, this company under the guidance of the Wisconsin Alumni Research Foundation sponsored the feeding of dried yeast to the cows of a herd selected from a total of 51 in Burlington and Sussex Counties, New Jersey, which supply milk to the dairy. Owing to the expense which yeast feeding entails and to the difficulty of controlling the vitamin D content of the milk the production of Franklin Lake Vitamin D milk by the yeast-feeding method has very recently been supplanted by the installation of a 4,000-lb. per hour Creamery Package Co. irradiator.

Addition of Golden Guernsey Grade A, both raw and pasteurized, and a chocolate-flavored Grade B whole milk gives the company a milk for nearly every market. Cultured buttermilk, 92-93 score butters and a chocolate-flavored syrup are available for those customers who want them. The buttermilk and chocolate-flavored syrup are made by the company, whereas the butter is contracted from a New York State butter maker. Grade A raw milk is still one of the company's products, but it is not nearly as much in demand as are the pasteurized and irradiated milks.

IN ITS early days as a processor of milk the company occupied a modest 20x30-ft. building on the site of the present main plant. To provide for pasteurizing facilities a 10x 20-ft. addition had been added to the original plant near the family farm home. The equipment in this plant consisted of a low-capacity, Case-type bottle washer, a Creamery Package coil-vat pasteurizer and a Davis-Watkins bottle filler. Both Grade A and Grade B milks were handled at the total volume rate of 1,000 qt. per day. As the volume of business grew, additional vat pasteurizers were added until at the end of three years there was a total of three to handle 3,000 qt. of milk daily. These batch-type pasteurizers and pipe connections were of standard tinned copper construction.

In seven years the volume of the business had increased so that in addition to the three vat pasteurizers it became necessary to add two 1,500-gal. storage tanks. Despite its newness in the dairy field, stainless steel construction was specified for these tanks of the vertical motor-driven agitator type.

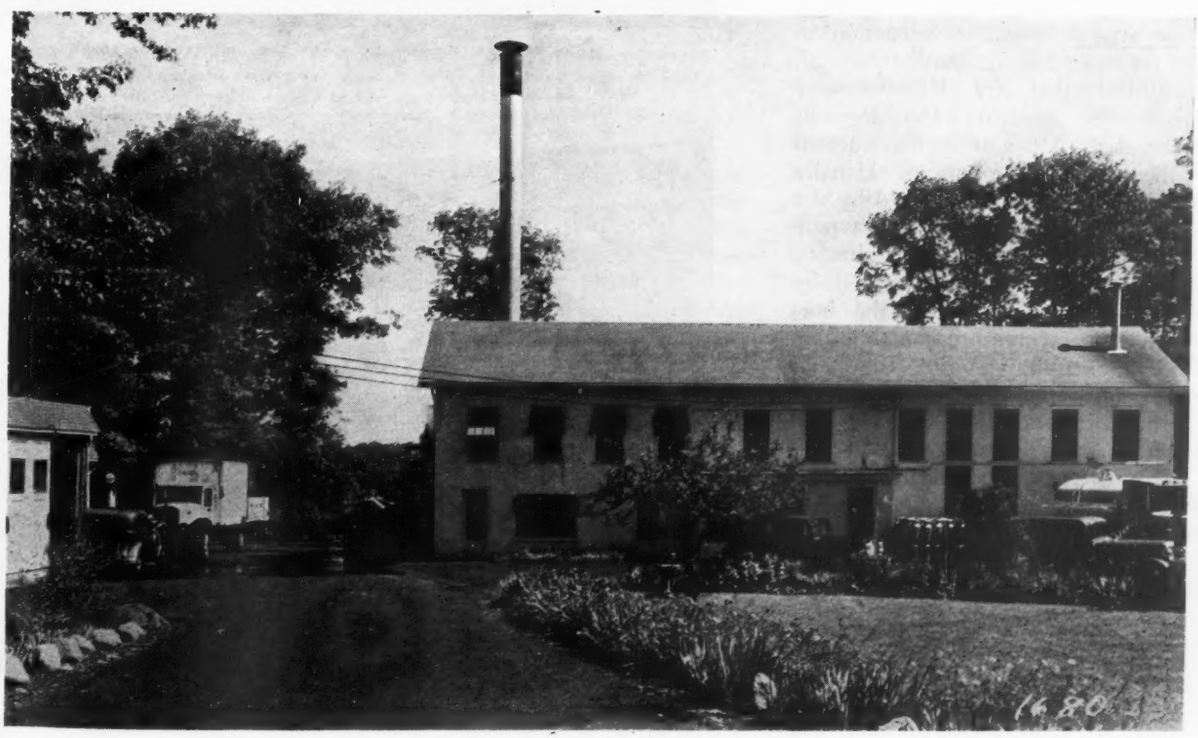
Our first experience with stainless steel was so satisfactory that the next year a 1,500-gal. stainless steel tank truck was added to supplant the familiar 40-qt. can for bringing Grade B milk from the Sussex receiving plant. This 30x40-ft. plant along with a fully equipped chemical and bacteriological laboratory had been built the previous year in the heart of the territory supplying milk to the plant. Grade A milk was supplied

Original plant in which only raw milk was bottled.

Above: In 1922 a 10x20 ft. addition was made to provide for pasteurizing 1,000 qt. daily. Family home is in right foreground.

Left: By 1930 additions and changes had been made to handle as much as 5,000 qt. daily. The original plant is the central portion of the enlarged plant.

Below: 1935 saw the same plant remodeled and designated as the "main" or "Grade B" plant. The new 30x60-ft. "Grade A" plant is in the rear but physically separate from the main plant. Garage and "box car" truck are seen on left.



by farmers living within a radius of 30 miles of the Franklin Lake plant and continued to be delivered in the 40-qt. cans.

Growth of the business to this point necessitated additions to the plant and the installation of an 80-hp. Erie City horizontal boiler in place of the 20-hp. boiler to supply steam to the several departments throughout the plant, to make hot water by mixing with cold water at the valves, or for use as steam in the washing and sterilizing operations. Treated deepwell water is used in the boiler.

WITH the coming to the front of continuous method of pasteurization the coil-vat batch pasteurizer gave way to the continuous system, consisting of the tubular-type preheater and five-pocket type holder pasteurizer. The coil vat pasteurizers had performed effectively as pasteurizers, but were of too low capacity to meet daily production demands of as much as 5,000 qt. Also, periodic retinning was necessary and keeping them free from milk stone was a problem. The continuous system was of stainless steel as were all pipe connections for the hot milk.

However, the continuous system had an unsatisfactory effect upon the cream line of the pasteurized milk and exhibited a lack of flexibility to cope with emergency situations. The result was its replacement, after one year (in 1932), by the present four Creamery Package 200-gal. batch pasteurizers of the vertical vat type. They are of special construction in that they provide for heating 200 gal. of milk to 143 deg. F. in twenty minutes by spraying 146 deg. F. water at the top and by flood action of the water on the bottom. Usually 160 deg. F. water is required by the flood system to get and hold a pasteurizing temperature for 30 minutes. Milk temperatures are recorded by Taylor instruments, while the hot-water temperatures are controlled by Tagliabue regulating units. Ingersoll-Rand motor pumps are used on the hot-water circulating system as well as on the coil-cooling system.

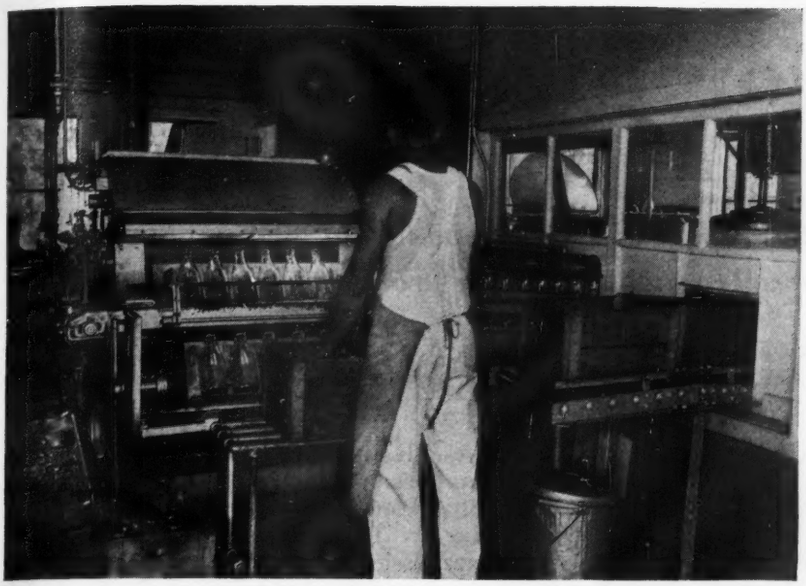
Also about this time reinforced concrete floors were replaced by the more durable Drehmann tile brick floors with a slope towards centrally located drains. In the bottling room of the main or "Grade B" plant the milk is cooled by flowing over water and brine-cooled, single, 2-in. coils 16 ft. long housed in a polished aluminum and glass-enclosed, room-like compartment suspended from the ceiling. The ceiling over the bottling area is also of polished aluminum and the side wall separating the bottle washing and the filling departments is of glass to facilitate cleaning and to give better lighting in both departments. The cleaned and sterilized bottles pass through a protected opening in the wall on an aluminum-covered conveyor to a Davis rotary filler and capper adjustable to handle 55 to 60 qt. or pt. bottles per minute. At the present time this main or "Grade B" plant covers a ground area of 30x90 ft. and houses the boiler room, the control laboratory and offices as well as the Grade B receiving, pasteurizing and bottling units, the buttermilk department and chocolate syrup making units.

IN BUILDING and equipping the new "Grade A" plant advantage was taken of the experience gained through expanding the "Grade B" plant to meet production demands and to keep it up-to-date with technical developments in milk pasteurization. Raw milk for "Grade A" bottling and irradiating arrives before 9 a.m. daily in 40-qt. cans and is emptied as wanted into the tinned-copper receiving vat.

From the receiving vat the milk is pumped by a Viking meter-flow

Milks for the "Grade A" plant are delivered in 40-qt. cans.

In these units are pasteurized the standard Grade A, the Golden Guernsey, and the irradiated Guernsey milks. Portion of irradiator unit is seen on the extreme right.



Bottles and cases for Grade A milks pass directly through openings in wall to bottling department.

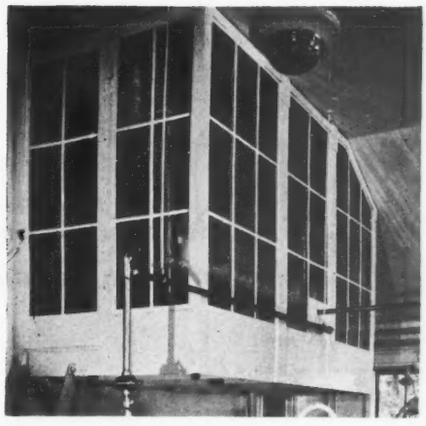
Filled and hooded bottles of Grade A milks are carried by roller conveyors across intervening platform space which separate plant from cold storage room in main plant. Irradiator unit is shown in the upper left of picture

pump to the three 200-gal. batch pasteurizers either direct or via the irradiating unit situated at the end of the relatively wide passageway between the pasteurizing and bottling areas.

From the pasteurizers the hot milk is forced by a Creamery Package motor pump through a Cherry Burrell Simplex filter and stainless steel piping to a Creamery Package 1-in. tube twin cooler enclosed in glass and polished aluminum compartment suspended from the ceiling over the end of the passageway between the pasteurizing and bottling areas opposite the irradiator.

From the cooler the milk flows by gravity into a covered Davis ten-pocket No. 6 rotary filler and capper, adjustable for 38 qt. or 48 pt. per minute. A Standard Cap and Seal unit puts a protecting paper hood over each bottle of standard pasteurized Grade A, pasteurized Golden Guernsey and pasteurized irradiated Guernsey milks.

Bottles for these milks are washed and sterilized in a 35-case capacity, Type C Creamery Package washer and taken through an opening in the wall on a Monel-metal-covered conveyor to the filler. From the filling, capping, and hooding line the bottles are manually placed in cases and conveyed under a spray of water into the cold room for storage and delivery to the 48 retail dealers and to the thirteen retail routes of an affiliated company. Cases of the bottled milk for this affiliated company are hauled to the central distributing point in a 300-case capacity aluminum body



Twin-coil cooler for Grade A milks is enclosed in a glass and polished aluminum compartment suspended from ceiling over end of passageway between the pasteurizing and bottling areas.

"box car" truck, insulated with sheet aluminum foil.

Refrigeration is supplied by a 10-ton Creamery Package ice machine driven by a 30-hp. Fairbanks Morse diesel engine. A 20-hp. General Electric motor is held in reserve against breakdown emergencies. The diesel installation is so recent that as yet no attempt has been made to utilize the heat from the exhaust to preheat the feed water for steam making. The cold storage room is held at 36-38 deg. F. by an automatically operated Creamery Package 5-ton compressor unit and an air-circulating unit which is inside the room.

NOVEL use is made of the waste water from the cooling coils by having it flow as desired into an outside swimming pool adjacent to the two plants and at the rear of the family residence. Sewage waste is handled through a series of seven 500-gal. septic tanks situated on the down slope of a field to the rear of the plants.

Another example of how this company keeps up-to-date in the quality of its milk is found in the fact that all milks are tested bacteriologically and chemically at least once a week. All farms and herds producing milk for the dairy are inspected and tuberculin tested under federal supervision. All employees as well as the cows are physically examined as often as every three months and not less frequently than every six months.

The growth of our business convinces us that there is merit in a continuous modernization program for both product and plant equipment, maintenance, and construction.

Built for Efficiency

PART II

Effective methods of materials handling and good layout give smooth flow of meat through Morrell branch. Flooring problem also solved.

By FRANK K. LAWLER
Assistant Editor, FOOD INDUSTRIES

MUCH of the efficiency in the Brooklyn, N. Y., branch of John Morrell & Co. comes from good building design, effective layout of departments and equipment, and adequate provision of materials-handling facilities.

Testimony to the excellence of the building is that it received an award as the best industrial structure erected in Brooklyn in 1932, the award being based on these attributes: attractiveness of design, quality of workmanship, class of materials, architectural excellence, and last—but most important—appropriateness of the design for the use to which the building is put.

A two-story-and-basement structure with a 70-ft. smokehouse tower, the building measures approximately 75x180 ft. The tower is in the front part of the building, and its 70-ft. height is broken by a ribbed arrangement of the brick. Windows are provided all along the outside walls except where the coolers and smokehouses and the shipping platforms are located, and six large ventilating skylights over the processing department make that room extremely light and well ventilated.

To get a picture of the effective layout of this branch and of the efficient methods of materials handling, it is necessary to understand the arrangement of each floor. Starting with the cellar (Fig. 1), there is at the rear a beef cooler with a network of overhead rails for handling beef carcasses. Barreled products are stored in this cooler, too. Also in the basement are the laundry, engine room, boiler and incinerator. Materials are taken to and from these departments and also to the smokehouse fire pits by trucks, these being carried up and down on the main elevator.

The first floor (Fig. 2) houses a sales cooler at the rear, smokehouses and a sales office at the front and a long shipping platform in between. The shipping platform represents an important factor in the materials-handling system of the branch. It extends all the way across the building, and alongside it is a car siding from which four freight cars may be unloaded simultaneously. On the opposite side is an open loading space extending into the building for a depth of 24 ft., allowing ten trucks to park and receive outgoing orders. At night, the trucks are parked in this place, so they may be loaded early in the morning before the drivers arrive. Electrically operated and push-button controlled rolling

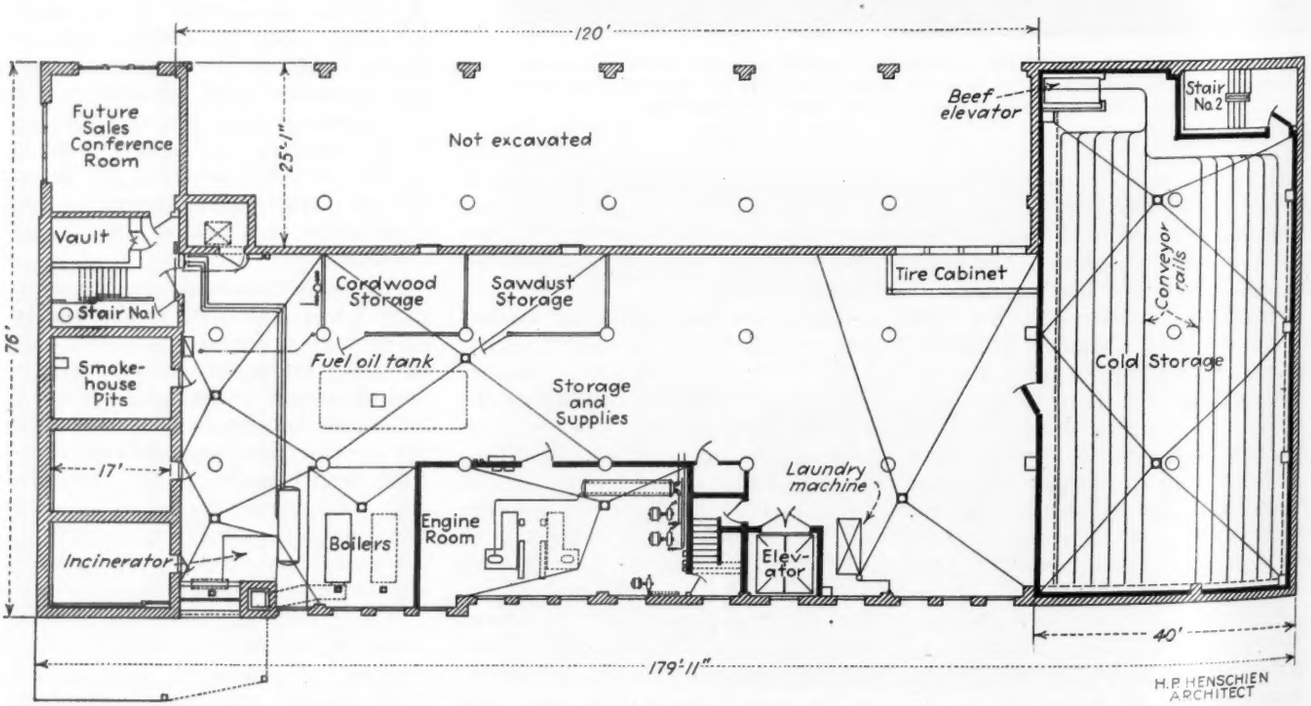


Fig. 1: Cellar plan of Morrell branch, showing location of basement cooler, smokehouse pits, engine and boiler rooms and laundry.

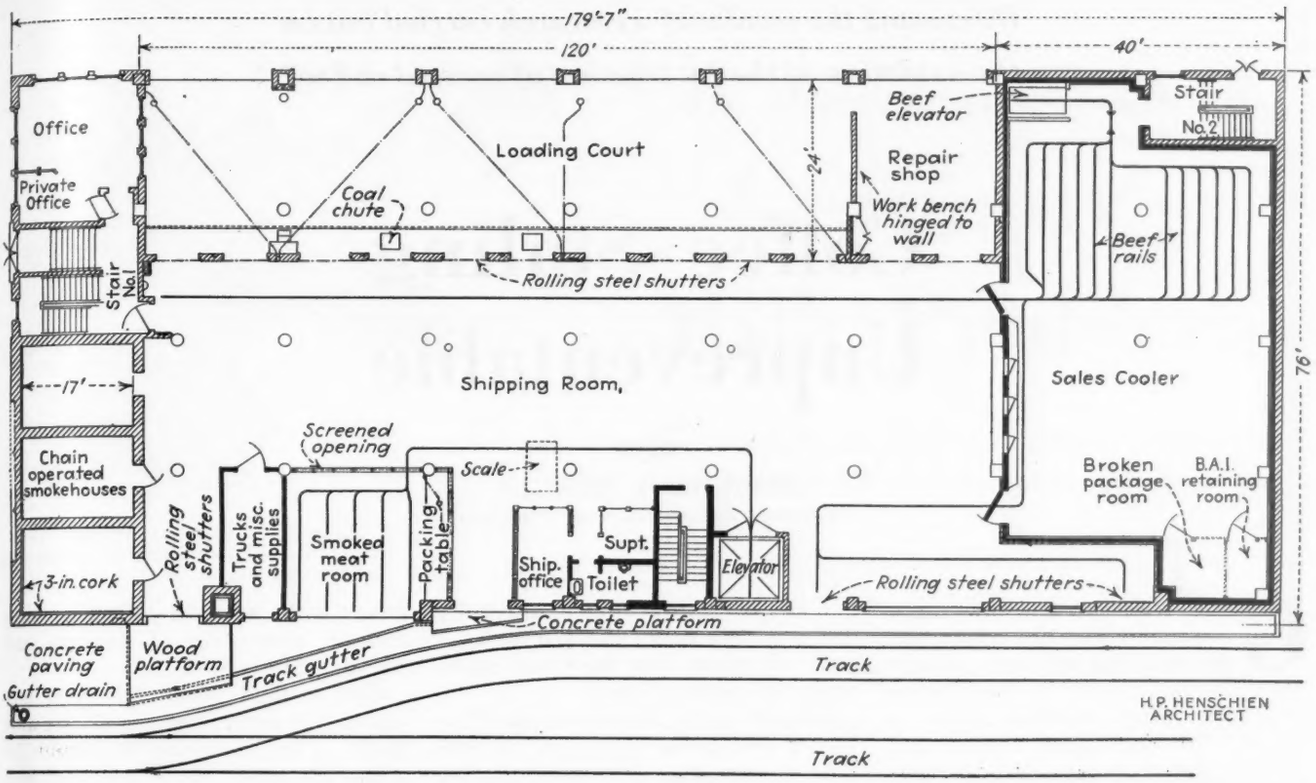


Fig. 2: First floor plan of Morrell branch. Note arrangement of shipping room with respect to car siding, loading platform and sales cooler. See also the position of overhead rails.

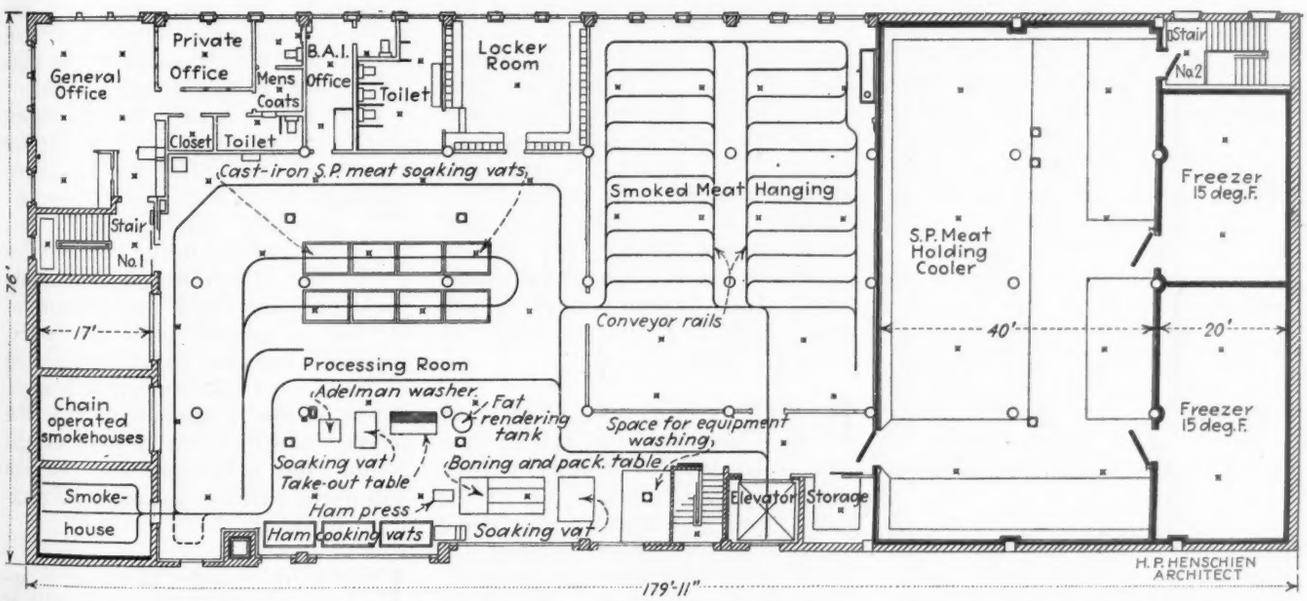


Fig. 3: Second floor plan of Morrell branch. It shows the arrangement of the processing and materials-handling equipment and the relative positions of freezers, holding cooler, smoked-meat room, processing department, smokehouses and elevator.

doors enclose this loading space, converting it into an effective garage in summer and winter. Located conveniently adjacent to this space is a shop where the trucks are serviced and repaired.

At the center of the shipping platform on the side next to the car siding is the shipping clerk's office, with platform scales in front of it. Next to this office is a room for keeping smoked meat for customer inspection and for storing canned meats. This smoked-meat room has a network of overheard rails to accommodate the "trees," these rails connecting to one leading from the elevator, which brings meat from a holding room on the floor above.

There also is an overhead rail passing from the unloading side of the shipping platform to the sales cooler, it being used to carry beef carcasses. This rail connects with a network of overhead rails in the end of the cooler next to a special beef elevator which takes meat to and from the basement cooler.

On the second floor (Fig. 3) at

(Turn to page 520)

Discussing the results of a research carried out on the oxidation of the fat fraction of roasted coffee*

Coffee Staling Unpreventable

says

ROBERT O. BENGIS
Chemistry Department, Yale University

GOODNESS in coffee is mainly concerned with the aroma and flavor of the beverage. There are numerous species of coffee beans and each, after roasting, gives a "drink" of individual aroma and flavor. Almost always, several types of green beans are blended in order to arrive at a combination which will give the most satisfying beverage. Having obtained the proper blend, it has been recognized that the roasted coffee does not always give the same "drink," even though it has been brewed in exactly the same manner each time. The beverage will vary in aroma and flavor from a rich, full-bodied, fragrant and pleasing quality to a flat, bitter, rancid and disagreeable, unpalatable condition.

This phenomenon is known as an aging or staling effect, and it is with this problem that a research program has been involved at Yale University. What are the chemical reactions which take place during the staling of coffee? Can these changes be avoided by any chemical or physical means?

In general, foods deteriorate on aging, with varying intensity. This is manifested by such visible conditions as mold, rot and loss of moisture, which is concomitant with a hardening effect. Many times, however, this deterioration can only be detected by the change in aroma and flavor, as with butter and eggs, and coffee belongs to this class. One of the greatest causes for spoilage in foods is the presence of oxygen. This gas is instrumental in changing some of the various constituents of foods which have an affinity for it and thereby alters the flavor of the entire food. The chemical composition of the roasted coffee bean is such that it is very easily attacked by oxygen. A study was therefore made from this point of view.

Roasted coffee contains about 15 to 16 per cent of its weight of oils and fat. A very large portion of this oil and fat is what is known as unsaturated. In other words, this material has an affinity for any substance to help it become saturated and it has been found that oxygen is one element which is absorbed. Moreover, when the oil or fat is extracted from roasted coffee, it carries, dissolved in it, the flavor and aroma bearing substances. This material is very volatile and complex in its chemical constitution and also easily oxidizable. Therefore the oil and fat fraction constitutes one of the most vulnerable points for oxygen attack which would have a detrimental effect on the coffee bean.

IN THE experiments carried out at Yale University, the fat fraction was isolated from freshly roasted coffee and from another lot of the same roast after it had been allowed to age. In the former instance, the aroma and flavor were very pleasant, full-bodied and fragrant, closely resembling that of the beverage. In the latter case, however, the fat fraction possessed a flat, rancid and disagreeable aroma and flavor.

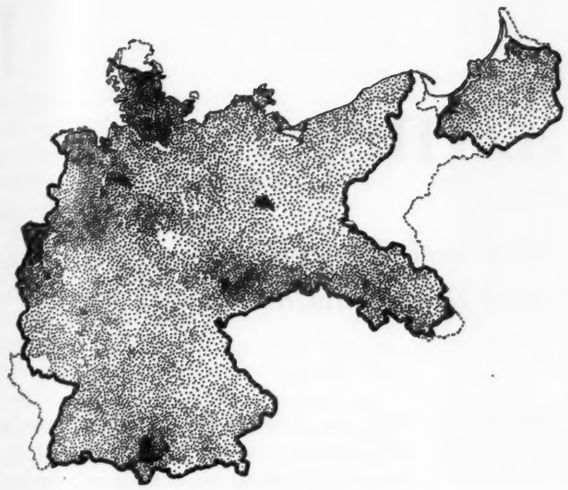
It was of interest to ascertain whether oxygen was instrumental in this change, so a method of chemical analysis was developed and applied to the fat fraction which would indicate how much more oxygen could be absorbed by the water soluble constituents of the fat. In all cases, less oxygen was taken up in the experiments with the aged coffee, proving that an absorption of oxygen had already occurred.

One method which has been advanced for preserving the aroma and flavor, is the packaging in vacuum by means of which air is removed and kept away from the coffee while aging. It appeared of interest, therefore, to conduct an investigation, similar to the one previously described, with coffee which had been packed in the high vacuum-type cans and allowed to age in such containers.

Here also it was definitely shown that oxidation takes place in the fat fraction of the coffee during aging, although in a less marked degree. The extracted fats gradually lost their full fragrant flavor as the coffee grew older. Even though the vacuum packaging decreased the amount of air left in contact with the coffee, there was sufficient oxygen remaining in the can to institute an oxidation. There is also a possibility that the oxygen which forms a part of the coffee itself is brought into reaction within the vacuum package by a catalytic action.

FROM the results obtained it appears that it is not possible to inhibit the chemical changes in coffee which affect the aroma and flavor. By packaging in high vacuum-type cans this deterioration may be retarded but not prevented. In other words, it was found that no artificial method is at hand at present which can fully preserve the original flavor and aroma of freshly roasted coffee.

*Abstract of an address before the Division of Agricultural and Food Chemistry at the ninetieth meeting of the American Chemical Society, San Francisco, Wednesday, Aug. 21, 1935.



Every dot on the map of Germany represents a production of 2 million liters at that point in the year 1928.

An American Looks at

Germany's Milk Problem

The second of four articles on European dairy manufacturing and marketing practices.

By H. A. BENDIXEN

Associate Professor of Dairy Husbandry, State College of Washington, Pullman, Wash.

IN Germany, where I spent over a year and visited many dairy plants, I found that quarts of beer and quarts of milk are consumed in about the direct proportion of the quality of the two. At any rate, the fame of Germany's milk is considerably over-shadowed by that of its beer. Nevertheless, the consumption of milk in Germany is fairly high compared to that of other European countries and it has been increasing considerably at the expense of beer in recent years. At Weihenstephan, near Munich, which is the beer capital of Europe, there exist side-by-side a large brewery research institute and a dairy research institute, both of which are under the supervision of the University of Munich. Although the Brewery Institute is the larger of the two, some very fine work is being done in the Dairy Institute, not only in developing different kinds of cheeses to go with the beer, but also in promoting the use of milk.

Milk consumption, as well as milk quality, however, is highest in Northern Germany, and for that reason, perhaps, the finest dairy research institution in Europe is located in Kiel in Northern Germany, operating in conjunction with the University of Kiel. During my year of study at this institute, I was privileged to observe many of the interesting scientific investigations which were carried on there in seven distinct but cooperating divisions: namely, the Institutes of Dairy Production, Dairy Chemistry, Dairy Physics, Dairy Bacteriology, Dairy Hygiene, Dairy Engineering and Dairy Economics.

The dairy physics institute operates a large commercial milk plant handling over 600,000 gal. of milk annually of which 49 per cent was sold as fluid milk in the city of Kiel. All milk was pasteurized, but only half of it was sold as bottled milk, the other half in cans. Milk plants of Europe do not as a rule deliver milk directly to the consumer, but rather to dealers and stores who deliver part of it and sell part of it over the counter. At the time of my visit, the consumer paid 25 pfg. for a liter bottle of milk delivered and 21 pfg. per liter at the store, 21 pfg. per liter delivered in cans and 19 pfg. per liter in cans at the store. Only half of the milk supply of the city of Kiel, population 220,000, is pasteurized, although compulsory pasteurization of milk exists in Berlin and some 20 other cities in Germany. Very little milk is pasteurized or bottled in most of the smaller cities and villages. The sale of bottled milk has decreased during the last year or two owing to economic conditions.

ALTHOUGH much milk is still being sold loose, many cities have forbidden the practice of pouring or dipping milk on the streets. A Federal trade-mark has been created for milk which is produced exclusively from herds continuously supervised by the Federal Tuberculosis Eradication System. To qualify for this trade-mark the milk must measure up to definite quality standards, be handled in licensed plants, and sold only in glass bottles capped with tamper-proof caps usually made of aluminum. The personnel handling the milk is under medical control. The milk may be either raw or pasteurized. More and more milk is bought on a quality basis although bacteriological plate counts are only made occasionally.

Germany, in 1931, had about 9,700,000 cows with an average production of about 5,400 lb. of milk per cow annually. Of these cows, 2,400,000 or nearly 25 per cent were also used as draft animals. The use of cattle as work animals is quite common in the Southern, mountainous district. The average production from these cows naturally is low, amounting to only 3,860 lb. of milk per cow per year.

The total production of milk from all cows in Germany was 52¼ billion lb. of milk to which may be added 2¼ billion lb. produced by 2 million goats, making a total of 54½ billion lb. of milk produced annually in Germany. About 13 per cent of the milk was fed to animals and about 14 per cent of the total was milk imported into Germany, leaving a net total of roughly 54 billion lb. consumed by the people. With the population of 63,000,000 people in Germany, this makes a per capita consumption of 850 lb. of milk per year compared with 950 lb. consumed in the United States in the same year. However, only 34 per cent of the milk is used as fluid milk, 56 per cent of it going into butter and 10 per cent into cheese. Most of the milk is sold through cooperative plants.

Phenothiazine

A new insecticide that promises to solve serious problems of food processors. Spray residue said to be eliminated.

INSECTICIDE spray residues on fruits and vegetables have been a serious problem for canners and other food processors. It has long been necessary to wash and treat chemically certain fruits to eliminate the residual arsenic and lead. The stringent regulations of the Food and Drug Administration were policed diligently to see to it that the careless or negligent sprayer did not leave such material on the foodstuff offered to the public. Now comes what promises to be an easy solution of this serious, costly problem.

A large number of organic materials have been investigated by the Bureau of Entomology of the Department of Agriculture and at last one has been identified which apparently is just as good an insecticide as lead arsenate but offers none of the difficulties of spray residue. This material is phenothiazine, an organic chemical compound synthesized from easily available cheap chemicals by an inexpensive process. Phenothiazine has been thoroughly tried out in the laboratory against the coddling moth with most promising results. Two large-scale field trials in different parts of the country for two seasons have given equally encouraging results. Bureau of Entomology officials are, therefore, prepared to recommend this material for further extensive use. They are most optimistic in their expectations of success with it.

Phenothiazine is a three-ring organic chemical compound in which the middle ring contains nitrogen and sulphur. It is manufactured by fusing together one part of diphenylamine with two parts of sulphur at 180 deg. C., using iodine as a catalyst. The crude product may be purified by recrystallization from toluene. It is a light yellow crystalline powder which melts at about 180 deg. C., neutral in reaction, insoluble in water, and only slightly soluble in cold oil or the usual organic solvents.

This new compound is applied as a dust for dry treatment if desired; but the preferred application is a suspension in water containing a wetting or adhesive medium. In the early experimental work some of the synthetic detergents of the gardinol group have been used as wetters. But it is believed that any of the convenient methods commonly used by orchardists and farmers for application of lead arsenate will apply equally well.

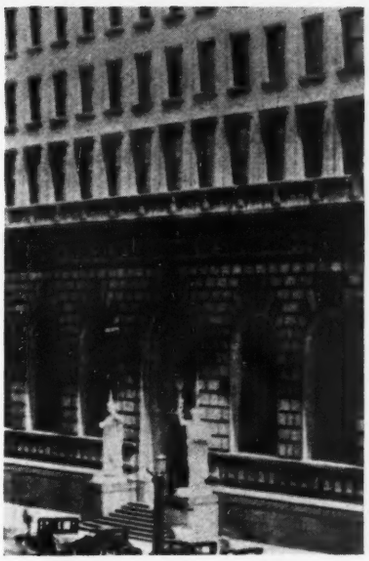
VEGETABLES of which the leaf or other green part is eaten, such as cabbage and beans, have already been extensively treated with other organic insecticides. The presence of arsenic and lead residues on such food makes them almost unmarketable because, in contrast with apples for example, it is not feasible to wash off all residues by the simple chemical treatments which eliminate arsenic and lead completely. Hence the rotenone type of insecticide is already widely applied. This material is one of the active constituents of derris root, in which it occurs to the extent of 4 or 5 per cent by weight. That root ground to 200 mesh or finer is usually diluted with clay or talc to give a mixture of about 0.5 per cent by weight rotenone. This powder is dusted on cabbage or beans when development of the plant has gone so far that it is no longer safe to use metallic sprays like lead arsenate. Thus there is excellent precedent in another field for the expectation of substitution of new organic materials for the old insecticides.

The new material, phenothiazine, is non-toxic to man and to all warm-blooded animals. This means that the agricultural user has no problem of preventing stock from access to foliage or fruit which has been treated. If the stock eat such material there is no harm. If there be any residue of the spray on fruit or vegetable reaching the canner or the home kitchen, there is no danger in this. Furthermore, it has been found that the spray, though reasonably adhesive to accomplish its insecticidal purpose, brushes or washes from the fruit and vegetable quite readily. Hence the ordinary methods of preparing fruits and vegetables in the cannery or in the kitchen accomplish substantially complete elimination of the traces of residue that may be on the food parts.

Of partciular interest to food manufacturers is the fact that the availability of this material, tentatively proved to have value as a substitute for lead arsenate, is going to stimulate more rigid enforcement of food and drug regulations regarding spray residues. It is expected, therefore, that extensive field trials of this material will go on during the coming season so that as many as possible can acquaint themselves fully with its effectiveness and the technique of its use. If it proves even half as good as anticipated, it is likely largely to supplant the metallic type of insecticides within a year or two.

FORMERLY the Bureau of Entomology, despite some private objection on the part of the Food and Drug Administration, has recommended the use of lead arsenate, feeling that it was the only effective insecticide for control of leaf-eating pests. Now, however, with the new insecticide available, the Bureau of Entomology says "The use of lead arsenate is not recommended for the control of insects attacking any vegetable crop considered in this circular." And the crops so considered include most of those of importance to commercial canners and processors. Thus the laggard producer of vegetables for canning or processing can no longer take shelter behind recommendations of the Bureau of Entomology.

Editor's Note: Phenothiazine is the chemical name of this substance and is not a trade name.



Need Money?

F.R.B. Will Lend Direct to Industry

By L. V. BURTON
Editor, FOOD INDUSTRIES

UNTIL every responsible man in business knows all about the subject of the new possibilities in banking it is necessary to reiterate and repeat the tale of opportunities to get money direct from the Federal Reserve Banks when loans are needed and justifiable.

Particularly is this important in smaller concerns. Big concerns have high-powered treasurers that know as much about banking as the bankers themselves. But in the smaller outfits where the treasurer has to "double in brass"; where the plant superintendent, office manager, or sales manager may also be treasurer, he may have so much else to do that he cannot follow the current banking situation as closely as he might.

Federal Reserve money is available right now under sane and proper conditions but it is well to understand the local bankers' problem, too, for many good people who are hard up find it very difficult to understand why others who have plenty of money can always get a loan at the bank. To them it is as incomprehensible as the passage from Scripture that reads: "To him that hath shall it be given. . . ." Also, it is as incomprehensible as the fact that a man who is known as a money-maker, i.e., a successful man, can often get a loan from his bank without collateral or endorsements on his personal notes. And all this will happen at a time when another man who is in financial difficulties will be required to put up excessive collateral before his banker can be persuaded to make a properly initialed entry in his pass-book.

Why is this? Is it a way of life? Are the banks in a conspiracy to keep business men from access to proper credit? Many of the latter have complained bitterly during the past few years about the bankers' attitude.

PUT it up to any old-time banker, one of ripe experience, and if he knows you well he will probably tell you that banks are in business to loan money *and get it back again* with a little extra, called interest, just to make it an experience worth repeating. As one banker, years ago, put it:

"A loan is not a gift, but it is dog-goned hard to make some folks see it that way. And it is still harder to make them see that the need for money is no basis at all for a loan. As a rule, the more a man needs money the harder it will be for him to get a loan, because the first thing a banker wants to know is, what is he going to do with it and next, how is he going to pay it back?

"Lordy, man, this town is so full of people who need money and never could pay it back, that if we ever started lending on the basis of necessity, we'd keep our doors open just about three days."

What about secured loans, the banker was asked? If a man has plenty of security, what business is it of the bank what the borrower does with the money he takes?

"Our loans are all secured all right. It just depends on what you mean by security. The best security in the world is ability to pay back the borrowed money on time. Now you take a fellow like your neighbor who runs a flour mill. He is a money maker—not a money loser. He is a good judge of values. You never need wonder if he is going to put $10,000 into some crack-pot idea, or into something that may be a good idea but isn't worth more than $5,000.

"Whenever I lend him money, I always know where he is going to put it, and I know that when the note is due he will have the money ready to pay it with.

"But now you take a chap like Mr. W. Best fellow in the world, clean, honorable, Christian gentleman, if there ever was one. Honest as the day is long. But he is just an economic idiot. I'll be damned if he can't get into more fool schemes that will never pay out than you could dig up if you wanted to throw your money away. I wouldn't lend him money, not even if he put up three times the collateral and had three good endorsers on his notes.

"If there is anything a banker hates, it's messing around with foreclosures, assignments, selling out other people's collateral, going after endorsers of bad notes, hearing hard luck stories, and being looked at reproachfully as though one were an old skinflint. I went through all that about 30 years ago, before I learned that ability to repay is the best security, and that a 200 per cent margin of real estate is a pretty poor substitute for money when times are hard. Especially when it means taking the roof away from some trusting old relative that had a wholly unjustified faith in the ability of the borrower. Is it any business of mine what people do with the money that we lend them? You'd just better believe it is. I'm too tender-hearted to go through all that again!"

Corporations are subject to the same scrutiny that individuals receive, for it is the individual that makes the corporation strong. Man a corporation with executives having a reputation for success, and the corporation will nearly always be able to get satisfactory banking accommodation.

HOWEVER, though recent times have changed the picture somewhat in details, the fundamentals remain the same, and probably the ability to repay borrowed money will always continue to be the crucial test of an application for a loan. Much depends on the mental picture which a banker has of the probable state of affairs of a borrower at the time of maturity of his loan.

During the past two years the government has tried to force bankers to lend more freely by shoving credit into their banks at unprecedented rates, the idea being to make them willing to look at loan applications with less skepticism than that which they had developed in the dark days of 1932. But the perennial and eternal question always comes up, "What

is the borrower going to do with the money, and will he have it again when the note falls due?"

Probably the government's scheme for forcing commercial loans would have worked better had not the various spokesmen for the government told different stories. Unfortunately, on the one hand, we heard exhortations to lend and to borrow, while on the other we heard virulent and biting criticisms of unsound banking practices. One speech would offset the other, and nothing happened.

Then the Federal Reserve Act was modified in such a way that, under Section 13-B, a borrower could go directly to the Federal Reserve Bank of his district and apply for the money, a procedure that was not possible before, because banks were the only ones that were previously permitted to borrow from the Federal Reserve Bank.

EVER since June, 1934, industry has been able to go directly to the Federal Reserve Banks for loans if local banks would not or could not give the accommodation. In actual practice it has worked out that the Federal Reserve Bank investigates through an advisory board. Then the loan committee of the bank acts. Oftentimes the loan committee is more liberal than the recommendations of the advisory board which is composed of business men.

Investigations are promptly made. Decisions are also prompt. A business man either gets the money, or he doesn't, inside of three or four weeks. The loans can be used for any purposes except to pay off old debts; and the theory here is that, if old debts are paid off, the money will not be available when the note comes due, for the simple reason that it is gone.

The interest rate is 6 per cent; the time is anything up to five years. If there are any creditors with prior claims they are asked to subordinate their claims to the new loan. If the plant needs new machinery it can be bought from funds borrowed in this way. If it needs more working capital the money can be hired this way.

IN 1934, a canning company which had 125 acres of corn contracted and growing (this definitely marks it as a small plant) unfortunately had lost all its working capital in 1931 and 1932. It was in debt to the local bank which would not loan the canner any more money. But this local bank was willing to subordinate its loan to a Federal Reserve Bank loan. Furthermore, the canner was able to sell futures on his projected pack at good, profitable prices, because of the existing firm market conditions. All circumstances pointed to the ability of the canner to repay the loan.

Accordingly, a direct Reserve Bank 13-B loan of $13,500 was made in 1934 "to be liquidated out of proceeds from the current pack." The profits from 1934 operations netted $4,000, a part of which was applied to the existing loan with the local bank. Of course, the Federal Reserve Bank loan was paid off in full before figuring the profits. In 1935, application was made for another loan to the Federal Reserve Bank, but this time the local bank participated. The little cannery had shown that it could make money again.

The Federal Reserve Bank came to the aid of an old established brewery last year—a brewery that needed far more working capital than it owned or could raise at the time when beer became legal in 1933. It had an expectation of $6 million beer business in 1934, with possible profits of $450,000. But accounts receivable were piling up, and there were some bad debts, for breweries had usually carried the new customers entering the retail beer business. Local bank loans had gotten up to $500,000, and the bankers said, "No more."

The whole proposition was sound, but there was insufficient working capital. There was a definite expectation of profits. But there was also a limit to what a bank could or would loan. So the Federal Reserve Bank was called upon to help, and a plan was worked out and put into effect. Two wealthy stockholders agreed to loan $200,000 to the corporation, their loan to be subordinated to a Federal Reserve Bank 13-B loan of $600,000. One of the local banks participated to the extent of $300,000, covering its own loan to the brewery. The plan called for conversion of all short-term loans and the financing of accounts receivable in the one big loan. A plan of amortizing was set up. Everything has worked out beautifully and here, again, ability to repay plus a good reputation were the important factors.

IN another case, a small town flour mill, making a complete line of cereal products, had been hard hit by the depression. The company owned two mills, one of which had been closed owing to the lack of sufficient working capital. A $50,000 loan was made with the Federal Reserve Bank with participation by a large city bank. The loan was for four years, secured by pledges of receivables. Payments on existing obligations were subordinated by creditors. This loan has enabled the company to go ahead on an increased basis, and at the present time everything seems to be satisfactory.

Then there was the case of the firm of wholesale and retail bakers which had had losses in 1933 and 1934, but expected to increase their retail sales by $17,000 in 1935. The bakery had had some bad debts during the depression, chiefly due to failures of clubs and restaurants, but most of the accounts receivable were from wealthy families that were slow pay, but good in the end. The company owed the bank $10,000. But the company needed another $10,000 to increase its sales by an intensive drive.

The bank to which the company owed $10,000 was willing to subordinate its claim, but finally decided to put it in as its half of a $20,000 Reserve Bank 13-B loan that would run for two years, with chattel mortgage and personal endorsements as security. In making the decision to allow this loan, the Federal Reserve Bank states that the honesty as well as the business and technical ability of the management were the most important factors.

IN the fall of 1934 there was a small company that for 40 years had been making high-grade food specialties on a very narrow margin of profit. Business had fallen away markedly during the worst of the depression. On the other hand, they had modernized some of their products, and a new line of toilet specialties had been added. The only way the company figured it could make more money would be to increase its volume. It needed the loan to pay pressing trade debts and employ additional labor. The loan would tide the firm over until they could get the benefit of the receipts from Christmas business.

In this case the Federal Reserve Bank made a direct loan of $2,500 for three years on the security of the endorsement of the president of the company. The only real difficulty with this concern was that it did not possess enough fixed capital, so the Federal Reserve Bank states.

Cases like these could be cited at length. Any industrial business that can really go ahead with the aid of additional money can get it from the Federal Reserve Bank if local banks cannot be persuaded to lend.

FOOD PACKAGES and PRODUCTS

New

Three New Confections. Two penny and one 5-cent items have recently been developed by Curtiss Candy Co., Chicago. The 1-cent numbers include "Baby Ruth Suckers" and "Baby Ruth Wild-Cherry Drop" rolls. Made in orange, lemon, wild cherry and chocolate flavors, the former has proven quite popular, the company reports. The suckers are individually wrapped in waxed paper, and both wrapper and carton are printed in bright red. The carton for the cherry-drop roll, too, is in a bright crimson, intended to attract attention on the dealer's counter. The company's new 5-cent item is a "Butter Toffee" bar with almonds. The center, having a toffee flavor, is coated with chocolate and studded with almonds. The wrapper is transparent cellulose with a colorful design; the carton is of four-color design with a cover which turns back to serve as a display card.

Cap-Sealed Beer Can. Something in the nature of a cross between a tin can and beer bottle has been developed by Continental Can Co., New York. Built to contain 12 oz. of beer, the container has a short, cone-shaped top with an abbreviated neck which takes the standard crown cap used on beer bottles. The can has a diameter of approximately $2\frac{1}{2}$ in.; a height of $5\frac{1}{2}$ in. A boxboard carton of 24 cans, the usual method of delivery, weighs $25\frac{1}{2}$ lb. This compares to the 51-lb. average for a wooden case of bottled beer. Announced in FOOD INDUSTRIES in August, the "cap-sealed" can now is in production and is being delivered to brewers. It has been put into service by Consumers Brewing Co., Long Island City, N. Y.

Homogenized Milk. Fluid milk is being homogenized by City Dairy Co., South Bend, Ind. The advantage of the homogenized milk, it is said, is that it forms a softer curd in the stomach than the unhomogenized product. The treatment, however, prevents the cream from separatng and thereby does away with any "cream line" in the bottle. The homogenizing pressure used by City Dairy is 1,500 lb. per sq.in. Two other milk companies, Mount Royal Dairies, Ltd., Montreal, and Urbana (Ill.) Pure Milk Co., also are homogenizing fluid milk, the former using a pressure of 2,500 lb.

Adopts New Beer Bottle. The new "no deposit, no return" beer bottle, described in the August issue of FOOD INDUSTRIES, has been adopted by Piel Bros., Brooklyn, N. Y. Holding the same amount of beer as the standard bottle, the new Piel container is less than 7 in. tall, and 24 bottles filled and cartoned weigh only 37 lb. The bottle is handled on the regular equipment, with some adjustments.

Another Beer Can. More impetus will be added to the recent revolution in beer containers by Crown Cork & Seal Co., Baltimore. This concern

FOOD PACKAGES and

has completed the design of an "improved" type of metal container and now is installing manufacturing machinery with the expectation of releasing the first commercially manufactured samples within the next couple of months. Yes, the container will be sealed with a crown cap.

Tube Measures Paste. Calibrated collapsible tubes are the latest thing in food packages. Such a container has been adopted by Battle Creek Food Co. for its "Savita," a meat-like yeast and vegetable extract in paste form. Since a measured quantity of the Savita is mixed by the consumer with much larger quantities of other ingredients, an accurate means of measuring the amount is quite a convenience. The tube used by Battle Creek for this purpose has a scale on the back. Each graduation represents one teaspoon of the paste and the consumer merely rolls up the tube with a key to the desired mark.

Assorted Cold Cuts. Increased sales of sausage specialties were obtained during the hot summer months through a new idea in packaging on the part of Focke Packing Co., Dayton, Ohio. Knowing that consumers usually buy "cold cuts" in assortments, Focke started packaging various kinds of sausage specialties under one wrapper. And an attractive package was created by using transparent cellulose to make the bologna, salami, liverwurst and whatnot visible to the prospective buyer. Labeled "Week-End Delicatessen Lunch," the sausage package contains 1 lb.

Beverage Powder. "Malt-O-Milk," an "all-food drink," is the latest product of Williamson Candy Co., Chicago. Containing cocoa, sugar, malted milk and other ingredients, the product is a powder to be added to either hot or cold milk. The manufacturer packages it in 1-lb. cartons made of heavy, laminated paperboard and having metal ends and a friction-type closure. The paperboard consists of four layers with a moisture-resistant compound between each two, and it has a tight-wrapped label on the outside and a special paper lining on the inside. The artistic design of the carton is of modern conception, and the label pictures a cup of hot and a glass of cold beverage.

Oriental Modernism. Having decided to market chicken chow mein, Shefford Cheese Co., Syracuse, N. Y., did the job right by putting the product up in an effective package. The company adopted a container which not only is attractive but which has an Oriental air about it. The chow mein, noodles and soy sauce all are packaged together in a cardboard window carton which is printed in light yellow and has a red and black rule design. An overwrap of transparent cellulose enhances the good looks of the package.

Mushroom Sauce. Italian style mushroom sauce which contains, according to the manufacturer, much more mushrooms than any other on the market, is a new food put out by Mushroom Cooperative Canning Co., Kennett Square, Pa. The large per-

PRODUCTS

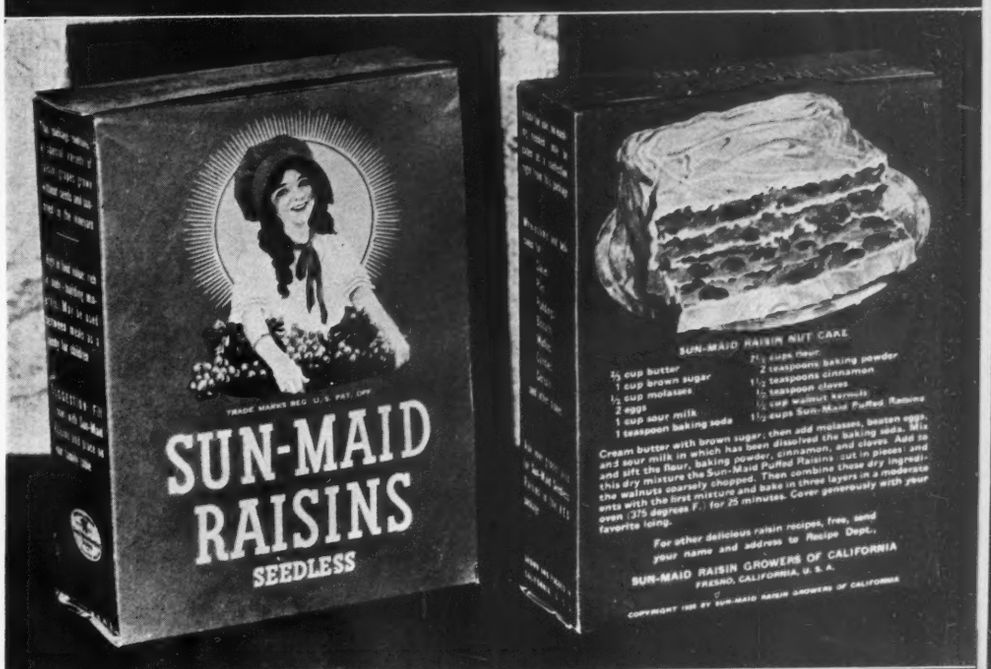
centage of mushrooms is made possible by the fact that the company is in a position to get unlimited quantities of the cultivated product. Other ingredients in this sauce are tomato paste, tomato puree, olive oil, spices and so forth.

Revamps 100-lb. Bags. Another step has been completed in the package redesign program by which International Salt Co., Scranton, Pa., is giving its large line of dissimilar containers a family resemblance. The 100-lb. bags for a half dozen varieties of salt now appear in dress styled after the modernized package for "Sterling" table salt, described in FOOD INDUSTRIES in May, 1935. The large bags resemble the small bags for "Purity" table salt illustrated in the September issue. Wide bands of International blue with reverse white lettering feature the design. This is simple, yet effective.

Carton Improved. The container for Sun-Maid raisins has been redesigned to enhance its display value. The new package of Sun-Maid Raisin Growers' Association, Fresno, Calif., has a slightly larger front panel which gives greater prominence to the well-known trademark; and a larger back panel has sufficient area for a new pictorial treatment. Illustrated in color on the back of the carton is an appetizing dish made with raisins, with the recipe underneath. There are twelve of these illustrated recipes in a complete set of cartons, which will induce dealers to use the packages for display purposes.

Replacement Glasses. Realizing that the most careful of housewives have to replace glass tumblers lost in breakage, Kelly Co., Cleveland, has adopted tumbler containers for its "Dixie" salted nuts and its "Golden Honey" flavored peanut butter. The company believes that the tumbler replacement business is sufficient to keep consumers buying the same brand with regularity, even after they are stocked up on glasses.

Electricity Purifies Milk. Pasteurization has been supplanted by electrical treatment in the plant of Foremost Dairies, Birmingham, Ala. Passing upward through a vertical, box-like vessel with carbon electrodes on opposite sides, the milk is subjected to 215 amperes at 220 volts. The milk itself conducts the electricity from one electrode to the


SUN-MAID
RAISINS
SEEDLESS
SUN-MAID RAISIN NUT CAKE
Cream butter with brown sugar; then add molasses, beaten eggs, and sour milk in which has been dissolved the baking soda. Mix and sift the flour, baking powder, cinnamon, and cloves. Add to this dry mixture the Sun-Maid Puffed Raisins cut in pieces; and the walnuts coarsely chopped. Then combine these dry ingredients with the first mixture and bake in three layers in a moderate oven (375 degrees F.) for 25 minutes. Cover generously with your favorite icing.
For other delicious raisin recipes, free, send your name and address to Recipe Dept.,
SUN-MAID RAISIN GROWERS OF CALIFORNIA
FRESNO, CALIFORNIA, U. S. A.

FOOD PACKAGES

Versatile Coffee Cap. A cap which has three functions other than closing the container has been adopted by Andresen-Ryan Coffee Co., Duluth, Minn., for "Arco" coffee. The closure is a venting metal cap with a built-in valve to release gases generated by the coffee. In addition to venting the container, this valve makes it easy to remove the cap. By inserting a match-stick in the vent, and pressing gently, the consumer breaks the vacuum in the container, permitting the cap to be unscrewed easily. A third advantage of this closure is that it may be reused in home canning, enabling the housewife to vacuum-pack her product in a container which is closed tightly while cold.

Pureed Clams. Having enjoyed a consistent sale of its "Oyster Puree," Warren Packing Co., New York, has decided to distribute clams in the same form. The details of the manufacturing process are not divulged, but the oysters or clams are put through a mill which reduces them to a very fine consistency. The process is quite simple, according to the company. The oyster product is packed in glass; the new clam package has not yet been completed.

other, and the minerals in it offer sufficient resistance to generate 165 deg. of heat. The milk is five seconds in passing between the electrodes and is fifteen seconds in the detention period, making a twenty-second exposure to the 165-deg. temperature. Foremost Dairies finds that this method gives highly accurate control, the milk being delivered by a constant-speed pump through a constant electrical discharge. Another advantage attributed to the process is that the milk does not contact any hot equipment, so that there is no oxidation or deposit of milkstone on the utensils. Furthermore, it is said, the method does not alter the flavor, caramelize the sugar, change the color or break down any elements of the milk.

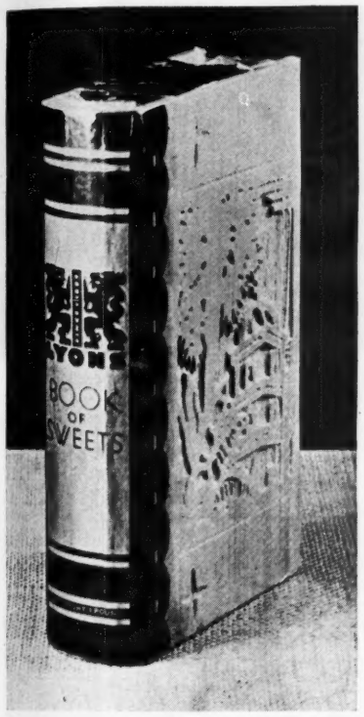
This process utilizes single-phase, alternating current and equipment made of heat-treated aluminum and glass. The equipment handles 600 gal. an hour at a cost of approximately 45 cents per hour for electricity.

Packages Natural Cheese. Natural cheese in 1-lb. packages is an innovation by Steve's Cheese Co., Denmark, Wis. A new process which keeps the cheese from molding makes this package possible. It involves coating the product with a special protective covering consisting of a sheeted wax, this being applied before the cheese is cured. The cheese is wrapped in paper and enclosed in a cardboard carton for marketing. This method of distribution not only gives the consumer a convenient quantity of natural cheese in an individual package, but it eliminates the rind and does away with waste.

Refreshing Beverage. A new carbonated beverage of the "refreshing" variety has been developed by Canada Dry Ginger Ale, Inc., New York. Called "Spur," the product is not a ginger ale, but is, in the words of the manufacturer, "something entirely different from anything we have produced." Put up in an 8-oz., crown-capped bottle with a gently tapering

neck, the beverage retails at 5 cents. It is now offered only as a bottled beverage, but it soon will be sold through soda fountains. Its first distribution is limited to New York, but the company will put it into wider distribution.

Book of Sweets.- Novelty in the package attracts attention, and it ought to mean something in the way of sales when combined with the attractiveness and reusability found in



the glacé fruit container of Lyons-Magnus, Inc., San Francisco. Appropriately labeled, "Book of Sweets," the package is made of cedar wood in the shape of a book which may be reused as a box for letters, handkerchiefs and the like. A mission design is sandblasted on the front cover to give the effect of an old carving. Over all is a wrap of transparent cellulose. On opening the cover to the package, the consumer is introduced to a selection of glacé fruits attractively set off with a red wax liner.

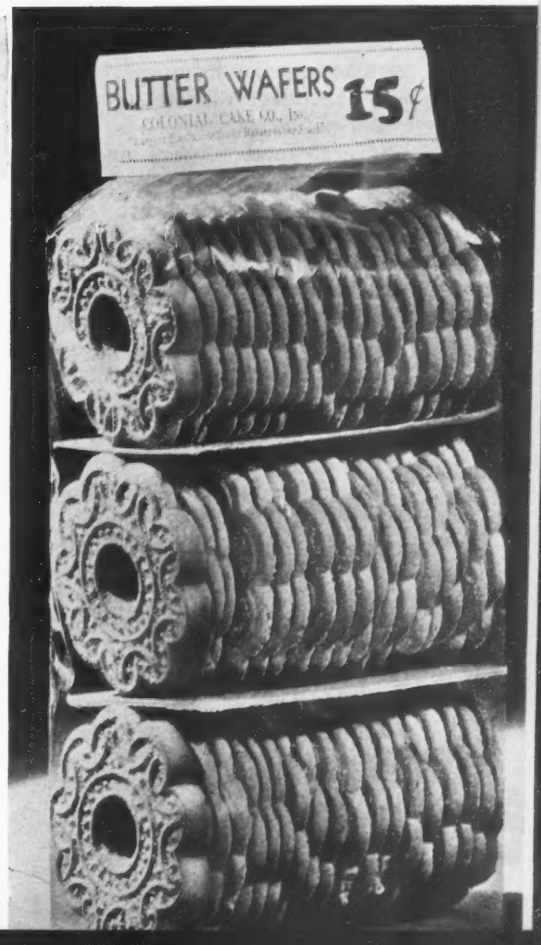
Concentrates Milk by Cold. After two years of experiment, a method of concentrating milk by freezing has been made practical by Supreme Guaranteed Dairy Farm, Pasadena, Calif. The concentrating process employs a steel drum which revolves in a shallow trough into which the milk flows. The drum is refrigerated from the inside and reduces the temperature of the milk to about 27 deg. F., at which temperature it collects on the drum in the form of crystals. Removed by a steel scraper, the milk "snow" falls upon a conveyor and is carried to a centrifuge which throws off the uncrystallized portion. The part thrown off is concentrated milk, containing only about 50 per cent of water. In this process, the temperature and speed of the drum are important because crystallization can be carried too far, impairing the taste of the milk. The concentrating process loses practically none of the solids, less than 0.05 per cent having been found in the water crystals; tests now being conducted are expected to show that the vitamins are not lost. Distributed in bottles, the concentrate retails at 14 cents a pint and 25 cents a quart, and it is gaining favor in the Pasadena, Glendale and Alhambra area of California.

Best Foods
THIS
REAL
MAYONNAISE
WILL MAKE ALL YOUR SALADS AND SANDWICHES MORE DELICIOUS IT IS RICHER, CREAMIER
COSTS BUT A TRIFLE PER SERVING

Back Label Series. Effective product promotion is being done by Best Foods, Inc., New York, through the use of a "back" label on its Hellmann's mayonnaise jar. The label on the jar illustrated is one of a series of eight different ones which feature the fact that the product is "real mayonnaise" and which give various short suggestions for its use.

Orange Concentrate. The man who created "Orange Crush," Clayton J. Howel, is back in the soft-drink business with another development, "Wonder Orange." Juice for this beverage is extracted in the orange-grove district from tree-ripened fruit, and to preserve the original quality, it is kept under refrigeration almost constantly during the process of making the concentrate. The manufacturing concern, Wonder Orange Co., Chicago, was formed by Mr. Howel after the lapse of the five years specified in the sale of his Orange Crush interests in 1930. The company distributes through bottlers and jobbers, and it is using counter cutouts, danglers and fiber and metal signs for promotion.

Three-Tier Cracker Bag. Something new, not only in packages but in packaging technic is incorporated in the three-tier wafer package of Colonial Cake Co., Inc., San Antonio. Packed in a transparent cellulose bag, the wafers are not dumped in in the usual manner, but are arranged in three rows, as shown in the illustration. Each row rests on a cardboard separator which gives protection against breakage. The company packs the wafers by hand, but the operation is done rapidly with the aid of a metal form which facilitates insertion of the wafers into the bag. This neat, tailor-made package has brought about a tremendous increase in sales, it is reported.



Repackaging Increases Sales 50 Per Cent

Adoption of transparent packages and an attention-getting trademark stimulates order-getting activity in the sales force as well as buying interest among the housewives.

By ERNEST CONTE
Vice-President, Milwaukee Macaroni Co., Milwaukee, Wis.

BY ADOPTING "open display" wherever possible in the repackaging of its entire product Milwaukee Macaroni Co. has increased its sales more than 50 per cent in the past three years. In every instance packages with transparent windows have replaced all "blind" packages and transparent bags have replaced paper packaging.

The change was initiated by the company experimenting with wrapping several of its products in transparent sheets. Results were so encouraging that transparent bags, which can be printed on both sides, followed. Visibility and cleanliness were the chief assets gained.

In this particular respect visibility was the chief factor as packaging in "blind" packages had previously taken egg noodles, spaghetti, and macaroni out of the bulk commodity class. But as so many alimentary paste manufacturers were using similar packaging and merchandising methods the Milwaukee Macaroni Co., like many of its competitors, found the going quite difficult three years ago. "Blind" packages just did not lend themselves to aggressive and smart merchandising.

The effect of our adoption of a transparent package was cumulative. Several food jobbers and salesmen joined our selling organization because our products were being packaged to give visibility. Retailers told us that our products could be more advantageously displayed in their new containers and that the housewife bought products she could see more readily than those in packages of the non-visible type.

Products which are adaptable to packaging in transparent bags (and also cartons) included egg noodles, spaghetti, sea shell noodles, elbows, alphabets, and soup rings. Macaroni is packaged in tube-shaped wrappings, with the ends sealed. The transparent middle section permits view of the strips.

A few items in the company's line did not lend themselves to bag packaging, but the difficulty was solved by using cartons having transparent windows. This feature was found to be a convenience to retailers having small display space, as only one package needed to be on display. The others are stacked behind it on shelves. This type of package has met the approval of retailers who do a large telephone business and deliver merchandise to housewives in baskets. The cardboard containers are strong enough to stand knocking around; breaking of package is an objection occasionally met in products packaged solely in transparent bags. The cartons are of importance in shipping or trucking to distant markets; products arrive in better condition.

Of last year's total production of 2,250,000 lb., an average of 1,000,000 lb. were packaged in transparent bags

and window cartons. Of this figure 75 per cent went into bags and 25 per cent into box cartons. This year the percentage will be still higher.

Packaging in window cartons is by machine except for noodles, which must be packaged by hand, because they are fluffy and cannot be handled satisfactorily by machinery. We have been obliged to charge more for products packed in window cartons than those put up in transparent bags, despite the fact that packaging operations are approximately 10 per cent less for boxes than for bags, which involve hand filling.

The cost of transparent bags is approximately $12.50 per 1,000 and cartons run from $16.80 to $18 per 1,000. We have found that cartons, no matter how attractively printed, will not sell as fast as transparent bags, which apparently attract more attention.

Adoption of the window carton has enabled us to increase our sales volume, but it has not been necessary to add to floor space requirements. Such new machinery as was required was installed in space formerly occupied by long tables used for the hand-filling operations.

The latest product to be added to the Milwaukee Macaroni Co. line is Red Arrow Farina Semolina, and as in the case of its predecessors, it was packaged in a window carton to permit a view of the product. Experiments were made in offering the farina only in a 12-oz. carton with a transparent window. It was found, however, housewives wanted a larger sized carton. With the start of 1935 the company introduced an attractive 1-lb. 12-oz. carton, with a transparent window in front.

In addition to the adoption of transparent or "visible" packages the use of an attractive trade-mark as a symbol of an entire line has been of benefit to us. Our quality line is packaged under the "Red Arrow" symbol, while our cheaper line is known as the "Bambino" group. The colors of the trade-marks and the significant design identify the products quickly on a dealer's shelves. We have also used a picture of a clown Pagliacci in our advertising.

Our cost of packaging in transparent packages is approximately the same as for the old "blind" package, but the return to the company for redressing its line has resulted in a 50 per cent increase in sales. Furthermore, the repackaging gave a new, dignified "tone" to the products. Visibility has meant confidence by the consumer in the quality of the product.

Colored Transparent Wrappers Protect Fat-Containing Foods

Contrary to results obtained in earlier studies, red, yellow and orange colored transparent cellulose films retard the accelerating effect of rancidity-producing light

By **WILLARD L. MORGAN**
Sylvania Industrial Corp., New York, N. Y.

Table I: Total Percentage of Light Transmitted Within Wave Length Limits

Colored Film	U. V. and Blue 2900 to 4900	Green 4900 to 5300	Yellow and Orange 5300 to 6500	Red 6500 to 6900	Entire Visible 4900 to 6900	Rancidity Retarding Ratio
Yellow D	27.6	48	75.9	87.3	74.6	2
Colorless	27.4	90	90	90	90	2
Green I	15.8	48	24.3	26.5	29.5	3
Red A	10.6	0.7	61.1	90	57.9	4
Yellow E	9.4	60	90	90	84	4
Yellow F	4.1	42.5	88.2	90	80.4	8
Opaque Green J	3.3	15	9.7	4.8	9.8	10
Green N	3.6	85.7	12.9	0.0	11.5	12
Yellow O	0.8	39.1	85.7	90	77.2	15
Yellow O. G	0.2	33	74.5	81.6	68.3	20
Green K	1.2	31.6	15.6	40	23.7	22
Yellow H	0.8	28	80.7	90	72	22
Orange Yellow	0.0	1.3	72.2	90	61.6	22
Red B	1.5	0.0	50.1	90	48.1	24
Green L	0.5	9	11	0.0	8.4	25
Yellow P	0.2	19	75	90	66.8	26
Opaque Black Green M	0.1	7.4	7.5	4.5	6.9	26
Red C	0.0	0.0	32.4	89	37.2	28
Opaque Foil	0.0	0.0	0.0	0.0	0.0	32

Table II: Protective Effect of Yellow Transparent Wrapping for Fifteen Different Foods

Food	Sunlamp Exposure: Test Hours Colorless	Sunlamp Exposure: Test Hours Gold Yellow Film	Sunlamp Exposure: Rancidity Retarding Ratio	Sunlight Exposure: Test Days Colorless	Sunlight Exposure: Test Days Gold Yellow Film	Sunlight Exposure: Rancidity Retarding Ratio
Coconut	7.5	150	20	5	100	20
Coconut Macaroons	..	...	..	5	100	20
Crullers	..	...	..	3	51	17
Lorna Doone Cakes	10	144	14.4	3	39	13
French Caramels	..	...	..	1	22	22
Fudge	..	...	..	1	22	22
Butter	5	64	13	2.5	32	13
Lard	..	...	..	4	86	21
Malted Milk	..	...	..	5	112	22
Potato Chips A	2.5	50	20	..	..	..
Potato Chips B	6	120	20	2	40	20
Pecan Nuts	10	170	17	..	..	..
Cashew Nuts	15	240	16	..	..	..
Walnuts	15	240	16	..	..	..
Swiss Cheese	8	48+	6+	4	79+	20+
Bacon	20	70+	3.5+	..	..	..

Materials marked "+" were not rancid when the tests were stopped.

From a paper read before the Spring Meeting of the American Chemical Society in New York on April 25, 1935.

SOME investigators[1] have recommended the use of a specific green, while others[2] have indicated a blue as colors for protecting wrappers of oily and fat-containing foods, such as butter, cakes, candies, crackers, lard, and nuts. Still others[3] find the use of dark colored films preferable to protect these foods against the accelerating effect of rancidity-producing light rays.

Our tests have shown that blue and invisible ultra-violet light rays materially accelerate the development of rancidity, while visible light rays, such as red and yellow, have little effect.

Fat-containing foods, such as potato chips, were wrapped in specially prepared cellulose films of a wide variety and shade of colors and exposed to sunlight to determine which of the visible and invisible rays of sunlight are accelerators of rancidity. The ratio of effectiveness was indicated by the time at which rancidity first became evident in taste and odor as compared with that for rancidity to develop in a control in an uncolored transparent cellulose. Generally these organoleptic tests have been confirmed by extraction of the oil and applying the Kreis[4, 5] test.

Accelerated tests were also made under a General Electric type S-2 sun lamp showing a very high infra-red intensity having no influence on rancidity development and a 5.2 per cent of emitted energy. Of this energy 85.5 per cent is light rays of 4,000 to 7,600 A and 14.5 per cent lying between 2,800 and 4,000 A. Similar calculation of high altitude sunlight[6] shows a distribution in the same wave-length regions of 89.7 and 10.3 per cent, respectively.

During exposure a temperature of approximately 35 deg. C. was maintained and a fan blew air over samples. Rate of development of rancidity is practically doubled when the temperature is raised 10 deg. C.[7]

Protection ratios determined under the sun lamp with various foods in all types of wrappers were closely duplicated when determined under

(Turn to page 514)

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PROMOTING *the Product . . .*

▶ H. J. Heinz Co., Pittsburgh, will conduct a ten-week campaign in 100 newspapers. The company also will use full pages in women's magazines for regular advertising and will conduct special campaigns on pickles and strained vegetables.

▶ Quaker Oats Co., Chicago, launched a campaign Sept. 20 on "Aunt Jemima" pancake flour, using 59 newspapers in 51 major cities. Each week the ads will give the menu for a complete meal, a dish made from the flour being one of the items.

▶ Kraft-Phenix Cheese Corp., Chicago, put into circulation in two national women's magazines in September a one-page ad in color.

▶ Campbell Soup Co., Camden, N. J., is promoting tomato juice with a $1,000,000 campaign. It includes a new radio program featuring George Burns and Gracie Allen, over a coast-to-coast CBS network on Wednesday evenings, together with four-color, full-page ads in magazines and considerable space in newspapers. The company has also renewed the program, "Hollywood Hotel," over CBS stations on Friday nights.

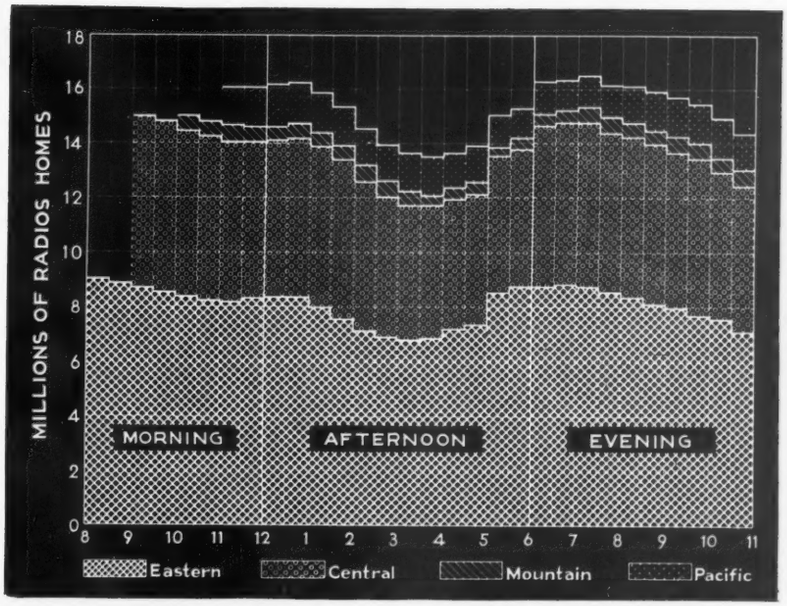
▶ Standard Brands, Inc., New York, will go on the air Oct. 6 with a new "bakers' broadcast" starring Robert (Believe-It-or-Not) Ripley. The program will be broadcast Sunday evenings over the WJZ-NBC network.

▶ Hawaiian pineapple canners will conduct a new advertising campaign which will be considerably more extensive than any of their previous ones. Full-color pages will be used in national magazines.

▶ General Foods Corp., New York, will be on the air this fall with three radio programs over NBC stations. Phil Cook will promote "Log Cabin" syrup on Wednesday nights, Jack Benny will advertise "Jello" on Sunday evenings, and Helen Hayes will publicize "Sanka" on Tuesday nights.

▶ General Mills, Inc., Minneapolis, is sponsoring a 15-minute broadcast of football news over WEAF on Monday evenings to promote "Wheaties."

▶ Swift & Co., Chicago, is again sponsoring a musical program, featuring Sigmund Romberg, over an NBC-WEAF network on Tuesday nights.



This chart shows how many radio families are reachable at any given hour. It is taken from the booklet, "Sales Begin When Programs Begin," published by National Broadcasting Co., New York.

▶ Libby, McNeill & Libby, Chicago, returned to the Columbia network Sept. 30 with the Boy Scout program "Og, Son of Fire," which advertises evaporated milk. It is a Monday, Wednesday and Friday evening broadcast.

▶ Peter Paul, Inc., Naugatuck, Conn., has devised a unique method of "educating" retailers. Cartons for its candy carry a series of six comic strips which dramatize sound principles of selling.

▶ Wine Institute, San Francisco, has been making a marketing survey on which to base its advertising and merchandising plans.

▶ Ralston Purina Co., St. Louis, is sponsoring a Monday, Wednesday and Friday-evening children's program built around the life of Tom Mix. It is heard over the NBC-WEAF network.

▶ Cream of Wheat Corp., Minneapolis, has returned to the Columbia network with a program featuring Alexander Woollcott as the "Town Crier." It is a Sunday evening broadcast.

▶ Phillips Packing Co., Cambridge, Md., sold over 200 carloads of food products in a "surprise order shower" on the 64th birthday of Colonel Albanus Phillips.

▶ Pet Milk Co., St. Louis, inaugurated on Oct. 1 a new radio series. "Pet Milky Way," featuring Mary Lee Taylor, home economist. It is a Tuesday and Thursday forenoon program on the Columbia system.

▶ American Sugar Refining Co., New York, is conducting a newspaper campaign in the East and Middle West, using some 275 papers.

▶ Great Atlantic & Pacific Tea Co., New York, has inaugurated a new musical series over CBS stations on Tuesday, Wednesday and Thursday evenings, Kate Smith starring.

▶ William Wrigley Jr. Co., Chicago, put the radio program, "Myrt and Marge," back on the air Sept. 30 over a CBS network, Monday to Friday evenings.

▶ National Biscuit Co., New York, went on the air Sept. 24 with a Tuesday, Thursday and Saturday afternoon broadcast over WOR. The program, "Martha Deane," promotes "Good Cheer" bread.

▶ Hills Brothers Co., New York, will use women's magazines, newspapers and demonstrations to advertise dates, fruit-cake mix and gingerbread mix.

▶ Kay Kamen, Inc., New York, has published a booklet, "Mickey Mouse Merchandise," which shows the great variety of products which the Walt Disney character has effectively promoted.

New Type Bread Body Has

Interlocking Shelves

Permits rear door unloading without reaching for loaves. Separate cab also innovation in design.

SEVERAL new features in the design of truck bodies for the retail delivery of bread are shown in the illustrations on this and the opposite page. These may be summarized to include: interlocking shelves which are pulled toward the rear to permit unloading from the rear door without reaching into the body; an unusual combination rear bumper and step; a steel framework to support the body structure and a separate driver's cab.

While most bakery bodies have the driver's cab integral with the body, the type shown herewith has a cab entirely separate from the body proper. Early bread bodies had the cab or driver's compartment integral with the body, because, by means of an opening or sliding door in back of the driver's seat, he had access to the load without getting out of the truck. This, however, was no real advantage to the driver, since he had to get out on the street or sidewalk before he could complete a delivery.

Then, as bakery routes got longer and longer because the capabilities of the truck were more fully realized, the open space or sliding door behind the driver's seat became a disadvantage rather than an advantage. This was because of the inability to keep dirt, dust and odors out of the body proper with any opening from the driver's compartment.

With the truck windshield open or the side door glasses lowered for the comfort of the driver in warm weather, all the dust and dirt blowing in collected at the rear of the driver's compartment and went straight into the body and onto the bread, if there was an opening into the body, or seeped into the body with more difficulty, but none the less certainty, if any type of sliding door was provided.

Also, with the gasoline tank under the driver's seat, gasoline fumes set free with the filling of the tank, also found their way into the body through the same openings. While the present almost universal practice of wrapping the loaves in waxed paper tended to prevent such dust and fumes from reaching the bread itself, it did not prevent the wrappings from becoming soiled or contaminated.

Rear view of the Rainbo bread body as built by the Winter Weiss Co., Denver, Colo. Note the three horizontal shelves and the wood drawers between the lower shelf and the body floor. Each shelf is made in sections and may be pulled toward the rear so that the load is readily accessible to the driver from the rear. Note also the combination rear bumper, step and rest for the driver's basket while being filled

HENCE the next step in the development of the bread body was to provide a solid partition with no openings at the rear of the driver's compartment. With stock panel bodies as furnished by truck manufacturers or quantity-production body builders, this meant simply the addition of a dustproof transverse partition in back of the driver's seat.

And from custom more than anything else, many of the 1935 bread bodies, even when built to order, followed the same procedure with the driver's compartment integral with the body and separated from it by a solid partition. However, with the increase in the height of the average bread body to increase its carrying capacity, this procedure requires a considerable drop from the top body

line to the top of the windshield. This in turn results in a rather snub-nosed front end, which is not pleasing in appearance or cheap to construct.

The above facts, taken in conjunction with the streamlining of current truck front ends and cabs and the comparatively low cost of such cabs and cowls when bought along with the truck, were responsible for the use of the separate cab on the bread body shown in the accompanying illustrations. Due to better appearance and less expense, it is predicted that the trend in bread body design will be increasingly toward the separate driver's cab.

The use of the separate cab requires that the driver must get out of and back into his cab on each delivery. This makes it necessary to so arrange the body interior that the driver may assemble as quickly as possible the various items going to make up each delivery. In the body shown herewith, this has been done by an ingenious arrangement of shelving.

As shown in the rear view of the truck with the rear doors open, the body is provided with three horizontal shelves. Each of these shelves is made in narrow transverse sections. Each section is removable and yet connected with the adjacent section in front and back so that the whole shelf may be pulled to the rear and carry with it its load of bread stacked three loaves high.

Thus, the driver can assemble his delivery from the extreme rear of the truck while standing on the ground and without crawling into the body. As the rearmost section of each shelf is emptied, it is removed by the driver, who pulls the next section with its load into place at the rear of the body.

The removed shelf section is placed at the front end of the shelf by handling it through a side door in the body on the right side near the front. Each shelf is therefore a sort of put-and-take affair, with the empty sections toward the front of the body and the loaded sections at the rear where the loaves are easily accessible to the driver.

The lowest of the three shelves is set at the same height as the top of the rear wheel housings. The space between the bottom shelf and the floor of the body is used to carry three wooden drawers into which loaves are placed. Two of the drawers are withdrawn through the rear door and the third through the door on the right or sidewalk side of the body.

THE body shown, which is mounted on an International chassis, has a capacity of approximately 1,000 loaves, including three tiers carried on each shelf and those stored in the three drawers.

The unusual-shaped metal framework at the rear and below the floor of the body serves as a bumper against the body being struck from the rear and also as a step. It is so placed that the basket used by the bakery driver can be set on the step and hooked underneath the rear of the body while it is being filled.

The body illustrated, which was built by The Winter Weiss Co., Denver, Colo., has a steel framework which is welded together to form the platform, cross-members, and wheelhouses. Steel angle corners are used and the top frame is also of steel, fitted with a triangular brace to provide strength and rigidity. The body top and corners are rounded on a 5-in. radius to give a pleasing and modern looking roof line.

Left side of the body showing the good proportions of the separate driver's cab and the body proper. Note also the poster frame at the front of the body side and one half of the combination rear bumper and step

Rear and right side of the body showing the two-part rear door; the full-height side door and the combination rear bumper and step. Note also the rounded roof edges and corners and the housings over the rear wheels to lower the body floor

The body shown is 8 ft. long and 65 in. wide outside and has an inside height of 51 in. The outside panels are auto body sheet steel. The inside of the body is lined with triple plywood and the slides on which the removable shelves are carried are made of galvanized iron.

Seventeen of the bodies as shown are used in a fleet owned by the Rainbo Bread Co., Denver, Colo. Since the Rainbo bodies were built the Winter Weiss Co. has built four more of similar dimensions, but with slightly different interiors for the Star Baking Co. of Colorado Springs, Colo., makers of Town Talk bread in that city.

Practical Problems of
TRUCK TRANSPORTATION

DISCUSSED BY EXECUTIVES IN THE FOOD INDUSTRIES

Preventative Motor Truck Maintenance

Question No. 12

1. Does it pay to set up some form of preventative motor truck maintenance in the operation of a fleet in the food field?

2. Of what should this preventative maintenance consist?

3. Are periodical inspections the backbone of what you consider adequate preventative maintenance to be?

4. If so, at what mileage or time intervals should such inspections be made?

5. What records or paper-work do you consider are essential to follow through on the procedure of preventative maintenance that you favor?

Periodic Inspection Necessary

IN regard to preventative motor truck maintenance, we consider it to be the backbone of all successful motor truck operation. All trucks of the Produce Division of the Borden Sales Co., Inc., are inspected periodically at 1,000 and 5,000 miles of operation. Each truck is inspected in accordance with a list of items to be checked. Lubrication is one of the most important of these items. The others vary with the make of truck.

At each 5,000 miles of operation, an additional inspection is made, intended to check items which do not require attention at the 1,000-mile interval.

In cities where we operate our own repair shops, these inspections are made by our shop personnel as a part of their regular routine. In cities where we do not maintain our own shop, the same inspections are made by dealers handling the make of truck involved. These latter inspections are made at flat rates with extra charges for any materials or parts which must be repaired or replaced. New parts are only added when the worn parts do not give indication of staying in service until next inspection.

It is one thing to set up a procedure to have these inspections made at the intervals specified, and quite another thing to see that inspections are actually made, especially when the fleet is scattered. Therefore, in the accounting section of the automotive department at the main office of the Produce Division in New York City, a record is kept of the inspections as made, by truck numbers. Daily truck operating reports, also made by truck numbers to indicate the work done on the trucks, show the recording speedometer or the odometer readings of each truck at the end of each work day. Thus, when a record is made in the office of the mileage at which the inspection was made on any given truck, it is an easy matter to determine the mileage at which the next inspection should be made. If it is not done then, a form is filled out and sent to the man in charge of the vehicle, advising him that the inspection should be made when the mileage reaches the predetermined point. When the man in charge indicates on the form that the inspection has been made, and gives the mileage at which it was actually done, this provides the necessary check on inspections, so that none are overlooked.—Jos. HUSSON, *Automotive Superintendent, Produce Division, Borden Sales Co., Inc., New York, N. Y.*

Keeps Full Records

WE would answer your questions concerning preventative maintenance as follows:

1. Yes.

2. (*a*) Driver's daily report. (*b*) Monthly inspection. (*c*) Monthly greasing.

3. Yes.

4. Monthly or special inspections.

5. Data charts giving detail as to the exact work to be done. Time and labor sheets. Cost analysis sheets by cars.—H. SUNDERMAN, *Stahl-Meyer, Inc., New York, N. Y.*

Pays for Large Fleets

IT IS our opinion that it does pay to set up some form of preventative motor truck maintenance in the operation of a fleet in the food field, if the fleet consists of ten trucks or more. On smaller fleets we do not believe that such form of maintenance is practical on account of the administrative features.

We believe that on large fleets, a record of past experience sets up the life of essential parts as relates to the particular business under existing conditions, peculiar to that line of business in which you are engaged.

We believe that periodical inspections are important in preventative maintenance regardless of size of fleet. The mileage or time intervals at which such inspections are to be made would depend on conditions and nature of material hauled.

The records or paper work which we consider are essential to follow through on the procedure of preventative maintenance would be set up on actual records showing life of parts and repairs as based on past experience, which would naturally change with the improvements in equipment and improved road conditions.—GUY MONAUGH, *Secretary-Treasurer, The Sandusky Packing Co., Sandusky, Ohio.*

Pays for Small Fleet

REPLYING to your questions, we have only a few trucks. However, we do have our trucks checked every 1,000 miles, which consists of lubrication, washing, and a check of rattles, etc., on the truck.

I think that periodical inspections are the backbone of what I consider adequate preventative maintenance to be. We keep no record of this preventative maintenance.—W. G. CUNNINGHAM, *The Frito Co., Dallas, Texas.*

Lowers Cost of Operation

PREVENTATIVE motor truck maintenance is quite worth while. We have been following a preventative maintenance system religiously for quite some time, and the fruit of our efforts is a lower per-mile cost of operation.

Our plan is simple but effective, and our theory is that if a motor vehicle is regularly washed, lubricated, thoroughly inspected, and properly adjusted and repaired, barring accidents, it will run a very long period of time without giving serious difficulty.

The backbone of our system is inspection. We attempt to give our vehicles a rigid inspection at least every 30 days. However, there are certain operations in connection with inspection that are not required on 30-day intervals; for example, adjustment of valve lash, or the inspection of piston rings, rod bearings, etc., which are performed at invals of 30,000 to 40,000 miles.

The majority of manufacturers have a representative maintenance set-up, which in their experience with their equipment indicates at what period of time these various adjustments should be made. We follow this as closely as is practical. However, we find that for our service it is not necessary to make

adjustments as often as recommended.

The system outlined by the majority of manufacturers is too comprehensive, and requires too much clerical work to handle for a large scattered fleet. We depend entirely on our traveling supervising mechanics for following the inspection details. Inspection reports, however, are forwarded to Chicago, and inconsistencies or weaknesses in design or operation are checked therefrom.—F. L. FAULKNER, *Automotive Department, Armour & Co., Chicago, Ill.*

●

Methods for Reducing Truck Accidents

Question No. 13

1. What fundamental practices have you found essential in reducing truck accidents?

2. Do safety committees, company traffic courts, or safety contests with buttons or cash prizes really help to reduce accidents?

3. Does it pay to give drivers who have had accidents time-off without pay instead of discharging them?

4. What percentage of accidents in your truck fleet has been due to mechanical failures?

5. Of what value in reducing accidents are mechanical or electrical directional signals?

"Time-Off" Pays

FROM OUR EXPERIENCE we would reply to your question concerning truck accidents as follows:

1. Establish the idea that after the first accident a man is on probation and is subject to dismissal after the second accident. Two minor accidents count the same as two major accidents. Because this policy is lived up to, it saves a possible serious accident by a careless driver. Drivers pay all traffic violation fines, regardless.

2. We have not felt the necessity of safety committees, company courts, or contests, and do not believe they are necessary to good judgment and efficiency.

3. It does pay to give "time-off-without-pay" to men who have accidents and does have a favorable effect on the other men.

4. A small percentage.

5. Very little.—D. M. SLYH, *Sales Manager, Good Humor Ice Cream Co., Los Angeles, Calif.*

Careful Driver Selection Needed

OUR past experience has led us to a custom of daily inspection of our equipment in which particular attention is given to lights, signals, brakes, tire inflation, steering, etc. Any piece of equipment found defective is not allowed on the street until repaired.

We also take great care in the selection of our drivers. They must be clean, neat and, above all, in good physical condition. Our drivers pass a physical examination at least once a year in which eye defects are carefully checked. Almost all our drivers have been with us for years without a serious accident.

We believe such activities as safety committees, company traffic courts and safety contests play a very real part in helping to reduce accidents. They serve to focus the driver's attention on safety measures and the seriousness of accidents. We employ cards and buttons with service stars at our plant; that is, if a driver passes twelve months without an accident of any kind he is given a button and for every six months additional a service star is added. Our drivers are very proud of their buttons and every regular route driver is carrying one.

We do not believe it pays to give drivers who have had accidents "time-off-without-pay" instead of discharging them. The accidents suffered by our drivers have been minor, with one exception in which the driver was intoxicated. This driver was discharged, as would be any other found drinking on duty. Intoxication or attempting to drive while under the influence of liquor are causes for dismissal.

Thus far, none of our accidents have been due to mechanical failure. Every accident we have encountered has been the result of carelessness in some degree, either by our driver or the "other fellow." Our constant inspection and repair of our trucks reduces the chance of mechanical failure to practically nothing.

We find that mechanical or electrical directional signals seem to be of value on the larger trucks. This is in cases where the drivers could not be seen because of the size of the truck body. On smaller trucks signals are not expected and, we feel, are not as effective as hand signals.—R. C. HAMLIN, *Manager, ice cream division, Borden's Farm Products Co., of Michigan, Detroit, Mich.*

Consistent Effort Reduces Accidents

HAVING been active in this company's safety work, I can answer your questions about truck accidents as follows:

1. To fundamentally reduce accidents, we must have a constant check-up in our garage of the mechanical safety of our equipment and then follow this up with our sales force by constant teaching and preaching on accident prevention.

2. Safety committees and traffic courts, also safety awards, do really help us to reduce accidents, but the company must be consistent and constant in its effort, with the personnel being taught by example that the traffic courts really are fair and are not only company-minded. The traffic court should always contain a representative of the sales force, a mechanical man and a member of the management.

3. Discharging a man for an accident has no real result unless it is a serious accident or the man has had a bad accident record. We believe in paying a bonus to drivers of very heavy transport trucks but not to salesmen.

4. A very small percentage of accidents, perhaps not even 1 per cent, has been due to mechanical failures.

5. We believe that mechanical signals are of little value. If a man will not use the tools that nature gave him, his hands, in indicating change of direction, he will never use any safety device.—GEORGE K. BATT, *Controller, Dugan Brothers of New Jersey, Inc., Newark, N. J.*

Disregards Minor Bumps

ANSWERING your questions as to methods of reducing truck accidents, our experience indicates the following:

1. Weekly mechanical inspection plus a driver's daily report for suggested repairs which are then made before truck again leaves plant.

2. We have had no experience with these methods.

3. If a driver has a major accident due to carelessness on his part, and this is proved upon investigation, he is immediately discharged. Minor bumps are disregarded.

4. Negligible, if any.

5. We have no experience with these gadgets.—IRWIN G. KRIM, *Krim Beverage Co., Lebanon, Pa.*

Next Question

QUESTION NO. 14

Which gives the best results—peddle truck routes, or separate salesmen?

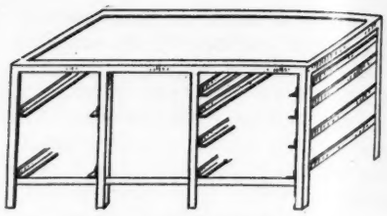
1. In the distribution of food products such as fresh meats, prepared meat products, butter, eggs, cheese, poultry, ice cream, milk, bread and potato chips to retail store outlets, is it better to employ peddle truck routes on which the driver also takes the orders than to use a separate corps of salesmen to solicit the business with the truck driver simply delivering the goods? If so, why?

2. Which method provides the lowest cost per hundred pounds delivered?

3. Can the separate corps of salesmen, if provided with cars at company expense, or allowed mileage for privately-owned cars, procure sufficient additional business to offset the motor vehicle expense as compared with peddle truck routes with driver salesmen?

4. Or is a combination of both salesmen and peddle truck route driver salesmen the most desirable method of distribution?

IDEAS
from Practical Men



Welded work cabinet frame.

Conveyor Crossings

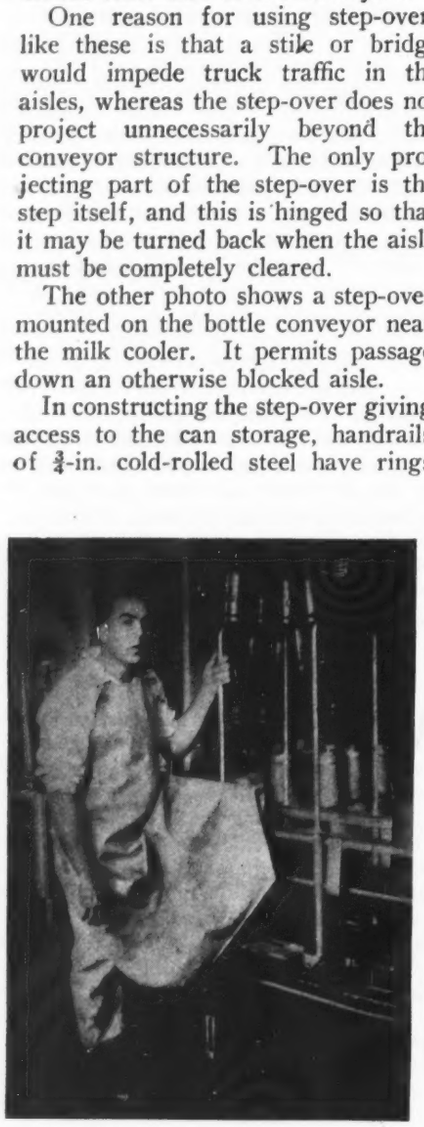
AT TIMES a conveyor must be located squarely across an aisle or traveled pathway in the plant. For instance, at Hage's plant in San Diego, the shortest route from the can-washing room to the shipping floor is a good 50 ft. less via one of the step-overs pictured here than by any other route. This step-over is more than a short cut. It also gives access to the can-storage space shown on the other side of the conveyor.

One reason for using step-overs like these is that a stile or bridge would impede truck traffic in the aisles, whereas the step-over does not project unnecessarily beyond the conveyor structure. The only projecting part of the step-over is the step itself, and this is hinged so that it may be turned back when the aisle must be completely cleared.

The other photo shows a step-over mounted on the bottle conveyor near the milk cooler. It permits passage down an otherwise blocked aisle.

In constructing the step-over giving access to the can storage, handrails of ¾-in. cold-rolled steel have rings brazed in place to act as flanges or feet. Installation is accomplished through four ¾-in. holes in the conveyor side-rail angle irons and the step structure of 1-in. pipe-spacers and 2-in. angle iron is slipped up and fastened in place by nuts on the hand-rail feet.

The step-over crossing the bottle conveyor is made in three parts. A single hand rail of ¾-in. round bar was shaped and bolted to the conveyor siderails. Then a cross-bar to serve as a step was fastened beneath the conveyor support by a U-clamp. —BILLIE BURGAN, *San Diego, Calif.*



Left: Step-over giving access to can storage in dairy plant. Right: Step-over crossing bottle conveyor.

Welded Work Cabinet

CONVENIENCE for such jobs as decorating cakes is obtained by the use of a welded work cabinet like that shown in the accompanying sketch, which was built for the decorating department of a large concern in the dairy and baking business.

This cabinet is of correct working height, has generous drawer space and is of all-metal construction except for the Monel-covered wooden top. It is 2 ft. 4 in. wide, 6 ft. 2 in. long and 2 ft. 7 in. high. Six drawers are provided. Four of these are 26½ in. wide and two are 22 in. wide. Drawer depths are two of 4 in., two of 6 in., and one each of 5 in. and 13 in. There is a center compartment 21x20 in., with double doors. Siding, drawers and doors are of galvanized sheet.

The frame is constructed of 1½x1½ x⅛-in. angle iron, mitred and welded. Drawer slides are of 1x1x⅛-in. angle iron and are welded to the frame. There is 8 in. of clearance under the bottom drawer.—AL SUTTON, *Kansas City, Mo.*

To Prevent Parking

TO PREVENT unauthorized trucks and other vehicles from parking in front of the loading and unloading platform an ingenious obstruction was devised and placed at the entrance of the driveway by a large food manufacturing plant. A 4-in. pipe flange was bolted to a steel plate which was fastened to the concrete with expansion bolts. A short piece of 4-in. pipe was screwed in the flange and to this was pivoted a longer piece of 5-in. pipe, which can be held in vertical position by means of a pin which is in turn provided with a padlock.—N. T. PEF, *Chicago, Ill.*

Moisture-Proof Lights

A WAY around the lighting trouble experienced by meat packers in their curing cellars has been found by John J. Felin & Co., Philadelphia, Pa. In the average curing cellar the air is so damp that moisture gets into the wiring at the light fixtures, damages the insulation, and causes short circuits. To avoid this, the fixtures in the Felin plant are equipped with glass "bowls" which enclose the bulbs and form air-tight seals around them and the bulb sockets. In this arrangement there is a large air space between the bowl and the bulb.

NEW EQUIPMENT
for Food Manufacturers

Cab-Over-Engine Truck

REO MOTOR CAR Co., Lansing, Mich., has brought out a new design of cab-over-engine truck for use by food distributors and others who transport their product under congested traffic conditions. As seen in the accompanying photograph, this truck is of streamlined construction and has a totally-enclosed body. It has a gross rating of 11,500 lb., a 166 in. wheel-base, and the loading space in the body is 14 to 15 ft. in length, depending on the length of the cab used. The engine is a Reo Gold Crown of 68 hp. at 2,800 r.p.m. Front tires are 7x20 and rear tires are 7x20, dual. Four forward speeds are provided in addition to the usual reverse.

Spray Machine for Biscuit

COATINGS of butter, flavoring oil, or other sprayable materials are placed on biscuits, crackers, cookies and similar products, by a machine developed by De Vilbiss Co., Toledo, Ohio. In operation, the material to be sprayed is fed to the guns in the booth by a pressure feed tank. These guns are located above and below the conveyor screen which passes through the booth, thus covering both top and bottom of the product in one operation. Conveyor speed is 70 ft. per minute.

A ¼-hp. motor pumps the drip into a reserve tank from which it may be drawn for re-use. A tray catches any crumbs that may fall through the conveyor, keeping them separate from the reclaimable material. It is claimed that one large bakery has saved 1,000 lb. of butter per day with this machine.

Low Pressure Tire

GREATER SAFETY and improved service are said to be obtained by the use of a new truck tire developed by B. F. Goodrich Co., Akron, Ohio. This is a low pressure tire, the "Safety Silvertown Commercial 15" and is for ½-ton, 112-in. wheelbase trucks. Advantages claimed are greater load-carrying capacity, longer wear, and more protection against bruises.

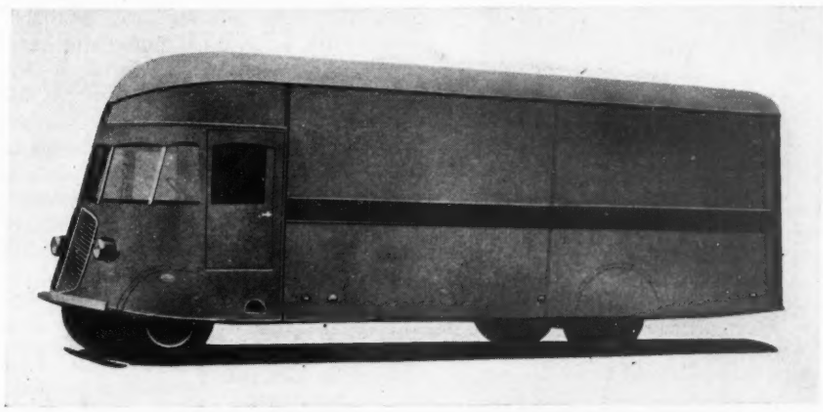
The tire is sized for a 15-in. wheel, with standard rim providing a low pressure construction said to give greater resistance to skidding than tires of narrower tread. It carries 15 lb. to 24 lb. air pressure, depending on the load and is as nearly round as possible, so that air pressure will be exerted equally in all directions. It is said to have a contact area 40 per cent greater than other types. Each tire is designed to carry a normal gross load of 1,350 lb.

Time Switches

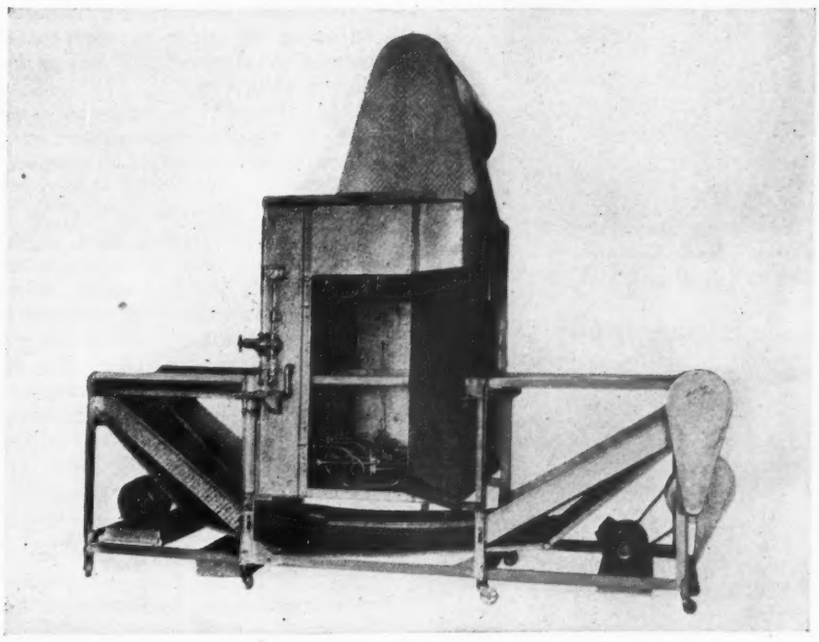
Two general purpose automatic time switches, Type T-17 and T-27 have recently been developed by the General Electric Co., Schenectady, N. Y. These switches are designed for use in various industrial and domestic applications, including the operation of heaters and furnaces, operation of lighting signs and for similar purposes.

Type T-17 is for the purpose of controlling electric circuits on a schedule related to the time of day. It will perform any practical number of operations per day, and can be set to skip one or more days if desired. It is of standard design for a.c. circuits of 150 and 230 volts, and has a current rating of 40 amperes per contact.

Type T-27 is similar to Type T-17, except that it is not equipped with a weatherproof case or with an automatic omitting device for selected days, such



Reo cab-over-engine truck.



Spray machine for biscuit.

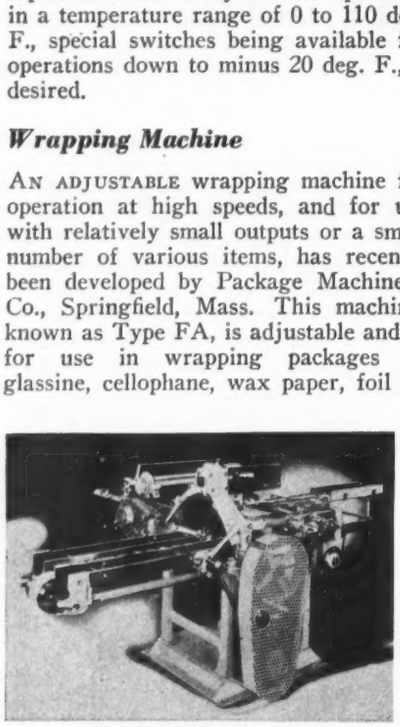
as Sundays and holidays. This latter type is for indoor service only.

These time switches are available in six forms: single throw, single, double and triple pole; double throw, single and double pole; and two circuits with separate break. They are for operation in a temperature range of 0 to 110 deg. F., special switches being available for operations down to minus 20 deg. F., if desired.

Wrapping Machine

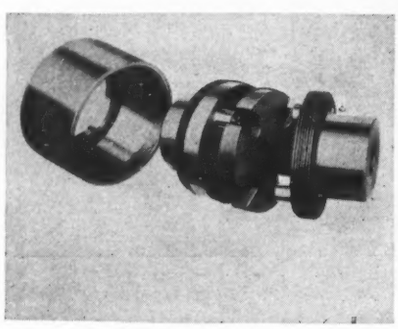
AN ADJUSTABLE wrapping machine for operation at high speeds, and for use with relatively small outputs or a small number of various items, has recently been developed by Package Machinery Co., Springfield, Mass. This machine, known as Type FA, is adjustable and is for use in wrapping packages in glassine, cellophane, wax paper, foil or paper wrappers cut from a roll. It is designed for use with plain or printed wrappers. Where printed material is used, the machine is equipped with a photoelectric cell which positions the printing accurately on the package.

The paper feed is continuous, being so designed in order to eliminate any jarring due to a reciprocating motion, and at the same time to accurately place the sheet in wrapping position. Fastening by glue or heat is available with this machine, as desired. The range is for packages up to 12 in. in length, 7½ in. in width, and 4½ in. in height. This range is covered in two models.



Wrapping machine for small outputs.

Flow meter.



Self-aligning flexible coupling.

Flow Meter

EMPLOYING the orifice and mercury manometer system of flow measurement, a new flow meter has recently been developed by the Bristol Co., Waterbury, Conn., which is claimed to be both rugged and accurate in industrial applications. This meter is available as an indicator, integrator, recorder or controller. Recorders can be furnished with pressure and temperature elements. Integrating flow meters are available either with or without automatic compensation for fluctuations in static line pressure. The meters are designed for use with either orifice plates or Venturi tubes, and are for working pressures of 1,000 lb. per sq.in. in standard design, and can be provided in special design up to 3,000 lb. per sq.in. In combination with the "Metameter" made by this same company, the new flow meter can be supplied as an electric flow meter for remote reading.

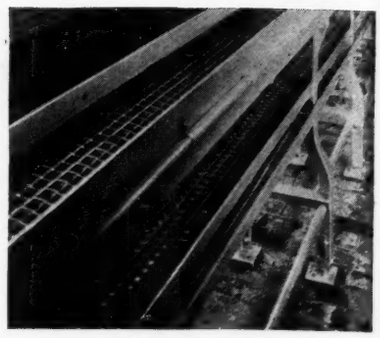
Flexible Coupling

A SELF-ALIGNING coupling for use in the direct connection of drives has been developed by Alloy Products Corporation, Waukesha, Wis. This coupling is self-adjusting in order to compensate for parallel misalignment as well as for angular misalignment. It is said to allow operation with as much as ⅝ of an inch of parallel misalignment, and from 3 to 6 deg. of angular misalignment.

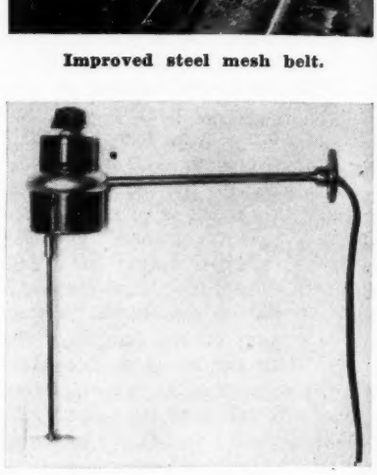
The coupling is made in four parts. Two of these are driving hubs, in the bases of which cylindrical lugs are set, two at each hub, 180 deg. apart. When assembled, these lugs fit in recesses in the periphery of a third part, which is a drive disk made of bone fiber. The recesses in this disk are long enough so as to permit the lugs to slide in them, and this feature provides the self-adjusting compensation for misalignment. The fourth part is a housing which acts as a guard over the coupling.

Steel Mesh Conveyor Belt

IMPROVED open mesh, steel conveyor belt is announced by Acme Steel Co., Chicago, Ill. The change made is a simple one, but is said to greatly improve the wearing qualities and reduce service and maintenance requirements.



Improved steel mesh belt.



Laboratory mixer.

Vibrating feeder with vibrating hopper.

This chain is composed of formed spindles of flat steel connected by pivot rods. Formerly, these rods were strung through round holes, and the edge of the hole was the only bearing for the rod. To reduce wear on these rods, the holes are now elongated to a point where the entire flat surface of the U-shaped section (at the bottom of the U) is utilized as a bearing.

Laboratory Mixer

FOR laboratory stirring and mixing, Chemical Publishing Co., 175 Fifth Ave., New York, N. Y., has developed a device called the "Lab-Mix." Actuated by a shaded-pole type motor, 110 volt, 60 cycle, it has a free speed of 2,800 r.p.m., which may be varied as needed by a rheostat. Shaft and propeller are

of Monel metal or are chromium plated, as desired. It comes with 6 ft. of cord and a plug, and may be screwed to a shelf or wall, or held in an ordinary clamp holder.

Belt Cutter

An 8-in. flat belt cutting tool of new design has been developed by Flexible Steel Lacing Co., 4607-31 Lexington St., Chicago, Ill. In this tool the cut is made by pushing the knife through the belt from one edge to the other. The knife is mounted on a plunger in a slot and is operated by direct-arm push without mechanical leverage. The knife or blade is of special alloy steel and it is said that it will make several thousand cuts before needing replacement. In operation, the belt is held immovable by a clamp while the cut is being made. This clamp also serves as a guard for the knife. The clamp and frame are made of aluminum alloy, the total weight of the cutter being 4 lb. 3 oz. The device is designed for use either on a bench or upended on the floor.

Vibrating Feeder

For accurately controlled feeding of ingredients to processing equipment, Jeffrey Manufacturing Co., Columbus, Ohio, has developed an electric vibrating feeder, No. 1-A, which is furnished with or without vibrating hopper. The vibrating hopper is for use with materials that have a tendency to arch.

Capacity of the feeder alone, depending on handling conditions and nature of the material handled, is up to 7,500 lb. per hour or more. Capacity is regulated by a calibrated dial transformer, adjustable to give any constant feed between a few ounces and the maximum obtainable per hour.

With vibrating hoppers, the feeder weighs 100 lb.; without, 55 lb. Pan decks are of cast aluminum, open or totally enclosed. The unit operates on 110-volt alternating current. Full load power requirement is 30 watts.

Total Time Meter

For totalizing running or idle time on electrically operated machinery, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., announces a new device called the "Total Time Meter." This meter registers hours and is devised for any application where it is desirable to know the total number of hours during which a circuit is energized or an apparatus is in operation.

The meter has four dials and will register 9,999 hours, approximately 400 days, before repeating. It operates from a 120-volt, a.c., 60 cycle synchronous motor. The case is two-piece, of molded plastic, having a flange diameter of 3½ in. and an overall length of 3¼ in. The meter can also be supplied for 11-volt or, 240-volt current. If desired this meter can be remotely mounted from the machine whose operation it records.

Electric Motor

Squirrel cage, normal torque and high torque motors, designed for refrigeration and air conditioning application, are announced by Century Electric Co., St. Louis, Mo. It is claimed that these new motors have a composite of torque, efficiency, power factor and quiet operation, best suited to the operation of this type of equipment, including the latest designs of Freon compressors. These motors are available in sleeve and ball-bearing designs in sizes from 600 hp. down.

Small Circuit Breaker

An oil blast circuit breaker for use where space is limited has been announced by General Electric Co., Schenectady, N. Y., called "Type FK-42"; it is rated 600 amperes, 7,500 volts; 800 amperes, 2,500 volts; and 25,000 kva. interrupting rating. All designs are double and triple-pole single throw, with all poles in a single rectangular welded plate steel tank. Provision is made for mounting directly back of panels, or in switch houses or metal-enclosed switchgear. Operation is manual or electrical. The design is particularly adapted to industrial plant installation.

Humidity Controller—Correction

In Food Industries for September, 1935, appeared a description of "Calorider," made by Research Corporation, 405 Lexington Avenue, New York, N. Y., a device for humidifying, dehumidifying and purifying air. In this description the cost of operaton for water and electricity was stated as 5 cents per day. This should have been modified to read as follows:

"The operating cost for humidifying a moderate-sized home or building of comparable size is only about 5 cents per day for water and electricity. For dehumidifying the same building, the cost is about 11 cents per hour. For larger buildings, or manufacturing operations in which the space involved is large or the internal generation of moisture is high, all the factors affecting the size of the unit or number of units needed must be known before the cost can be estimated."

The Manufacturers Offer . . .

Industrial Thermometers—General Catalog No. 1125, C. J. Tagliabue Mfg. Co., Park and Nostrand Aves., Brooklyn, N. Y., describes the line of industrial thermometers, hygrometers, U-gages, mercurial vacuum gages and mercurial barometers made by this concern.

Moisture Meter—For determining the moisture content of grains, the Tag-Heppenstall moisture meter is described in a recent folder by C. J. Tagliabue Mfg. Co., Park and Nostrand Aves., Brooklyn, N. Y.

Valves—General catalog No. 21, The Fairbanks Co., Binghamton, N. Y., lists and specifies a complete line of bronze and iron valves.

Air Conditioning—For industrial and other installations, air conditioning equipment manufactured by Frick Company, Waynesboro, Pa., is described in Bulletin No. 504-A.

Flavors and Colors—Essential oils, flavors, colors and similar chemical products are listed and priced in a recent bulletin issued by Fritzsche Bros., Inc., 111 Eighth Ave., New York, N. Y.

Industrial Control—The "Controlograph," a device for controlling temperatures and pressures, is described by American Schaefer and Budenberg Division, Consolidated-Ashcroft-Hancock Co., Bridgeport, Conn., in a new folder.

Tumbler Closures—A recent folder issued by Anchor Cap & Closure Corp., Long Island City, N. Y., discusses various types of closures for thin-blown glassware used as food containers.

Centrifugal Pumps—Bulletin D-17, issued by Lawrence Pump & Engine Co., Lawrence, Mass., discusses the "Vortex Black Arrow" single stage centrifugal pump.

Nickel Alloy Cast Iron—Section 1, No. 5, is a recent technical bulletin in the International Nickel Co., 67 Wall St., New York, N. Y., describing the properties of nickel alloy cast iron and some of its applications.

Cleansers for Food Plants—The use of combinations of sodium metasilicate and caustic soda for cleansing glassware, such as milk bottles, is described in a recent leaflet of Philadelphia Quartz Co., 121 South 3d St., Philadelphia, Pa.

Steel Industry—A century and a quarter of development in the manufacture of iron and steel by the Lukens Steel Co., Coatesville, Pa., is the subject of a recent historical bulletin issued on the occasion of the 125th anniversary of this concern.

Filling Machines—Automatic and semi-automatic filling machines for packages up to 15 lb. are discussed in recent leaflets of Stokes & Smith Co., 4918 Summerdale Ave., Philadelphia, Pa.

Synchro-Operator—A device for automatically paralleling a.c. generators is described by Allis-Chalmers Mfg. Co., Milwaukee, Wis., in leaflet No. 2202.

Pumping Equipment—Several new bulletins of Worthington Pump & Machinery Corp., Harrison, N. J., as follows: Bulletin W-450-B17A, describing deep well turbine pump Type Q, QA, QB, QC; Bulletin W-450-B22, describing No. 5 sump pump; Bulletin W-316-B3, describing vertical "Frefio" sewage and drainage pumps; Bulletin No. W-321-B6, describing "Monobloc" condensate return units, Types D and G.

Malting—In a recent bulletin, containing a reprint from the June, 1935, issue of *Brewers Technical Review*, modern malting methods are described by Froedtert Grain & Malting Co., Milwaukee, Wis.

BUSINESS TRENDS

Increased Cottonseed Oil Use

SPECIAL taxes on imported oils, coupled with the domestic price situation, may be the cause of the rapid increase that is being shown in the use of cottonseed oil in the manufacture of margarine. For the year ending June 30, 1935, production of margarine in the United States consumed 135,251,721 lb. of fats and oils of domestic origin, an increase of 171 per cent over the previous year, according to the Institute of American Fats and Oils. Of this, cottonseed oil made up 65,000,000 lb., an increase of 295 per cent over 1934. The use of beef fats in margarine also increased 32 per cent over 1934, to 29,000,000 lb. Peanut oil and soybean oil also went into margarine manufacture in increased quantities.

Lard and Oils Mount

REDUCED hog slaughter and consequent falling off in lard production finally, in August, were reflected in lard prices. Production of lard in the first six months of this year was only 361,000,000 lb., about 50 per cent of that for the same period of 1934 and 57 per cent under the five year average. Lard stocks fell off as a consequence. Early in August lard prices began to increase from the fairly steady levels previously maintained. On Aug. 21, October delivery reached 17.6 cents per lb. with September at 17.75 cents, well above what might be considered the normal level for the past decade. Subsequently, prices decreased considerably.

Edible oils, whether in sympathy with lard, or for some other reason such as pending taxes, also increased in price during the month. Until the short supply of domestic fats and oils is remedied, these higher levels are likely to continue.

Confectionery Rise Continues

FIGURES available for the first seven months of 1935, show that the increase over 1934 in the consumption of confectionery and competitive chocolate products has continued. From Jan. 1 to July 31, according to the Bureau of Foreign and Domestic Commerce, sales at $111,213,525 were 9.1 per cent over the same months in 1934; while July, 1935, sales were $10,952,821—a rise of 11.8 per cent over July, 1934.

Sales of competitive chocolate products still continue to increase more rapidly than sales of other confectionery, July, 1935, showing a 31.8 per cent increase over the corresponding month in 1934.

Sugar Continues Up

SUGAR distribution in the United States in 1935, up to Aug. 1, totalled 3,433,208 long tons, raw sugar value, 4.2 per cent greater than for the like period of 1934, according to Lamborn & Co.

European sugar consumption has also been increasing, the same source reporting that the fourteen principal European countries, from Sept. 1, 1934, to July 31, 1935, increased their use of sugar by 2.3 per cent, to 6,892,530 long tons, raw sugar value.

United States exports of refined sugar also continued on the upgrade, the quantity for the first seven months of 1935 being 41.6 per cent over the exports for the same period of 1934, and totaling 47,120 long tons. This sugar was exported to 50 different countries, the United Kingdom being in the lead with 13,732 tons.

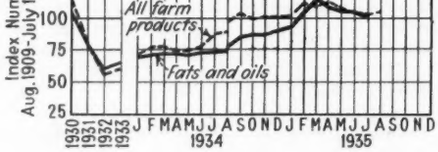
More Domestic Sugar

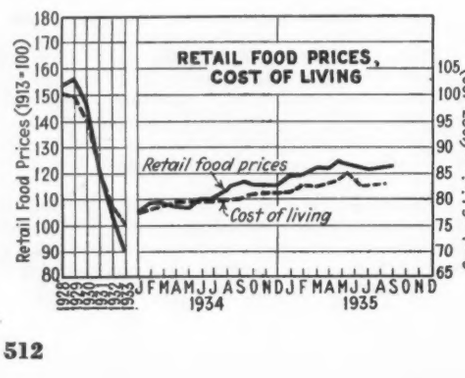
PRODUCTION of sugar from domestic raw materials will be greater in 1935 than the preceding year. Lamborn & Co., reports that the present outlook for production of beet sugar in the United States from home grown beets is 1,400,000 short tons, raw value against 1,239,575 tons produced last year. Louisiana cane sugar production is forecast at 216,000 long tons, compared to 209,000 long tons in 1934. In both cases, the condition of the crops is better than it was last year, which may have more to do with the increase than the quotas introduced under the Jones-Costigan Act.

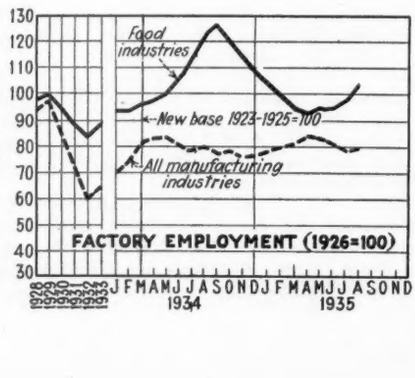
Hogs Advance, While Pork Drops

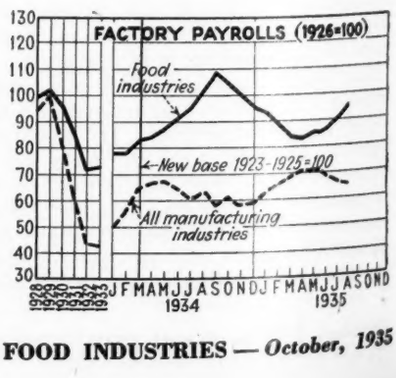
AFTER an August with the highest level of hog prices reached for any month since 1928, prices in mid-September reached $12.25 per hundred, the highest price in six years. Subsequently, in spite of continuing low receipts of animals, prices fell somewhat, but remained near to the $12 level.

August slaughter of hogs, reported from Chicago as 1,667,000 animals, is the lowest ever recorded for the month. For the first eight months of 1935, slaughter was 17,171,000, compared to 29,220,000 in the same period of 1934, and 33,336,000 in 1933. No immediate change in this trend toward lower numbers of hogs slaughtered need be looked









Business Rise Pauses

WITH the adjourning of Congress, the passing of the summer vacation period, the steady climbing of prices to give wider margins between cost of production and selling prices, and the increasing demand for war supplies and materials, business appeared to be off to a sprint start for the autumn season. However the start has slowed up for the time being.

While the *Business Week* index of business activity at 66.7 per cent of normal is 15.8 per cent above a year ago—1.2 per cent better than the 1930-34 average—it is 0.3 per cent lower for the month ending Sept. 14. The falling off came suddenly during the fourth week. This weakness, though slight, is quite general throughout all industry. It may be a "getting-the-second-wind" let down preliminary to another upward move.

U. S. Department of Labor reports the highest August wholesale prices since 1930 with the exception of meats and fruits and vegetables. Meats are the highest since 1929; fruits and vegetables are lowest excepting 1932. For all commodities the index of wholesale prices is 0.37 per cent higher for the month ending Sept. 14; farm products and foods are up respectively 1.12 and 1.17 per cent.

For the five weeks ending Sept. 21 the *New York Journal of Commerce* reports a general price index advance of 1.25 per cent; that for grains shot up 9.96 per cent, whereas the food price index dropped 2.42 per cent.

for, as the supply must remain abnormally low for some months.

Such a situation normally would cause a corresponding advance in pork prices. The present market, however, presents strong resistance to such a movement. Pork prices started to fall in mid-August, parallel to a momentary increase in the number of hogs marketed. Since then pork prices have been tending downward, aided by an active consumer interest in the relatively plentiful and less expensive lamb and mutton.

Wheat Revised Downward

TOTAL wheat harvest, as forecast by the Crop Report Board, was revised downward again at the first of September. While the August expectation was 607,678,000 bu. the crop is now estimated at 594,615,000 bu., except for 1934 the smallest crop since 1904.

In spite of the fact that this yield is from 30,000,000 to 55,000,000 bu. below estimated domestic consumption, the situation is not nearly so serious as has been indicated by some who, for speculative or political reasons, wish to arouse fear. While it is true that the yield of some special purpose grains is considerably below consumptive demand, there still remains sufficient carry-over from past years to meet this deficiency. A bright spot also exists in the ample supplies of animal feeds produced this year, assuring no drain on wheat stocks for feeding purposes.

In the world wheat market, the price continues to rise, influenced by shortages or lowered crops in some exporting countries. In view of this situation, imports of foreign wheat into the United States are likely to be held at a minimum, while prices of flour and baked products may tend to rise sharply.

INDICATORS

FROZEN and preserved fruits in storage on Sept. 1, 1935, at 91,373,000 lb. were about 10 per cent above the five-year average.

PROFITS of food processors are tending lower, according to the New York Federal Reserve Bank, which reports profits for the first six months of this year as 20 per cent below the 1934 level.

FISHERY PRODUCTS in cold storage have decreased 5 per cent below 1934; but, at 59,443,000 lb. on Aug. 15, were 1 per cent over the five-year average.

INDUSTRIAL PRODUCTION has lately increased throughout the entire world, except in France, Holland, Switzerland, Chile and Canada, reports the National Industrial Conference Board.

FARM INCOME, first half of 1935, totaled $2,585,000,000 compared to $2,330,000,000 for the same period of 1934.

CRANBERRY YIELD in Massachusetts, estimated by the New England Crop Reporting Service at 335,000 bbl., compares to last year's 290,000 bbl., and a five-year average of 395,800 bbl.

PEA PACK for 1935 is now estimated to be equivalent to 24,500,000 standard cases, compared to 15,742,000 cases in 1934; a five-year average of 15,422,000 cases; and a ten-year average of 16,283,000 cases.

TOMATOES for processing will not be as abundant as earlier estimates indicated; rain and wind damage on the Atlantic seaboard having reduced the prospects by about 10 per cent, to a prospective yield of 1,841,650 tons, or less according to some estimators.

SALMON PACK will be low according to all reports, with Alaska yield estimated at 4,874,255 cases compared to 7,194,206 cases in 1934, Columbia River at 208,863 cases compared to 281,219 cases, and Puget Sound so far running far below a year ago.

CROP DAMAGE to citrus fruits in Florida by the hurricane is not estimated to be over 10 per cent; the avocado crop was practically ruined.

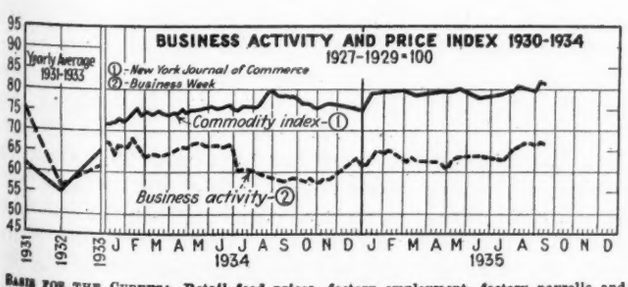
CANNED ORANGE JUICE production in 1934, as indicated by the sale of containers, was 750,000 cases in California and 150,000 in Florida.

COFFEE consumption continues upward in the United States, having risen 32 per cent during July and August, compared to the same months of 1932.

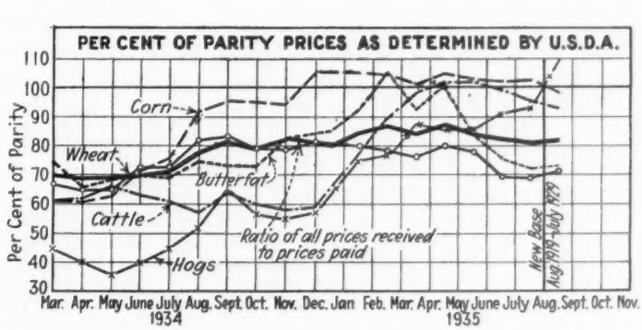
COFFEE stocks are 8.8 per cent less than a year ago, with 7,748,522 bags on hand, exclusive of Brazilian restricted stocks.

Construction News

	Pending (thousands)	Awarded September (thousands)	Total Awarded 1935 (thousands)
Bakery	$588	$85	$426
Beverages	233	451	3,854
Canning and Preserving	130	.....	868
Confectionery	28	.....	28
Grain Mill Products	813	43	1,354
Ice Manufactured	105	.....	459
Meats and Meat Products	200	214	2,090
Milk Products	485	325	1,575
Miscellaneous	462	96	3,219
Total	$3,044	$1,214	$13,873



BASIS FOR THE CURVES: Retail food prices, factory employment, factory payrolls and wholesale prices based on indexes of the Department of Labor. Cost of living index is that of the National Industrial Conference Board. Indexes of prices of fats and oils, and of all farm prices are from the U. S. Department of Agriculture, as are the per cent of parity prices.



Books Received

MOTOR TRUCK TRANSPORTATION IN MICHIGAN. By John S. Worley, Professor of Transportation, Engineering University of Michigan. Published by Department of Engineering Research, University of Michigan, Ann Arbor, Mich. 1935. 30 pp.; 8½x11 in.; paper; illustrated. Free.

Based on a research study financed by the Fruehauf Trailer Co., Detroit, Mich., this preliminary report covers facilities for highway transportation, highway traffic, social and economic values of highway transportation, taxation, regulation, motor truck service survey, safety factors, and relation of wheel loads to thickness of pavement. In the appendix is the outline for the complete report on the research project.

ANNUAL REVIEW OF BIOCHEMISTRY VOL. IV. Edited by James Murray Luck, Stanford University. Published by Stanford University Press, Stanford University, Calif. 1935. 639 pp.; 6½x9 in.; illustrated. Price $5.

Encouraging to the editors of this ambitious aid to research workers and technologists is the acceptance the previous volumes have received. Publication of Vol. IV marks the end of the three year introductory period. The project continues under the sponsorship of a non-profit corporation in which the editors become publishers.

Among the subjects discussed in the present volume those of interest to food production workers include Enzymes by J. B. Sumner; Chemistry of the Carbohydrates and the Glycosides by Sir J. C. Irvine and C. J. Robertson; Chemistry of the Proteins and Amino Acids by E. J. Cohn, Vitamins by L. J. Harris and the Chemistry of Bacteria by M. Stephenson. For workers in nutrition are several chapters on the metabolism of various food constituents and one by S. Brody on Nutrition.

MONOGRAPHS ON COLOR: 1. COLOR CHEMISTRY; 2. COLOR AS LIGHT; 3. COLOR IN USE. Published by the International Printing Ink Corp., 75 Varick St., New York, N. Y. 1935. 18, 21 & 29 pp. respectively; 8¾x11¼ in.; board; illustrated in color. Price $10 plus postage.

Contents of the three volumes deal with fundamentals and are free from the superficial approach of the so-called "color expert." Yet the presentations are such that anyone with a fundamental knowledge of high school physics and chemistry and a discerning eye for color and its use can understand.

Vol. 1 presents graphically the chemistry of color and the combinations of atoms that make or change color. Vol. 2 is devoted to the physical aspects of color and puts emphasis on the measurement and specification of color through the use of transmission or reflectance curves. The importance of this lies in the possibility for uniformity of color identification and the adoption of a recognized color terminology. Aspects discussed are exemplified in color. Vol. 3 deals with color relationships and contains ten pages of sketches in color to illustrate use of five pairs of complementary hues. To those food manufacturers who maintain facilities for designing their own labels, artistic packages, and advertising pieces these monographs will have practical use.

Colored Wrappers

(Continued from page 502)

sunlight of fairly uniform intensity during the test. Roughly, 2½-hr. exposure under the sun lamp is equivalent in action to sunlight exposure of an average day.

Before any food is used for rancidity retardation tests it should be free from any rancidity, at least as indicated by the Kreis test. We have found that non-rancid foods showing a fairly strong positive Kreis test will frequently become rancid at rates independent of wrapper used and will give erratic experimental results. Under same exposure conditions various lots of foodstuffs giving a negative Kreis test develop rancidity at widely different rates, varying up to five times with different lots of potato chips and up to ten times with different lots of crullers.

We believe that these experimental difficulties and failure to realize the autocatalytic effect of small amounts of ultra-violet rays transmitted by the filters used by other investigators have been the source of the confusion and conflicting claims made.

The relation between the rancidity-retarding ratio of forty various colored films and the amount of blue and ultra-violet rays transmitted by each film was determined by a photo-electric cell having a red-purple Corning glass filter. Use of Eastman Azo E No. 2 printing paper as a means of estimating the blue and ultra-violet rays has the limitation that this paper is not very sensitive below 3,500 A.

More exact information concerning the effectiveness of filters studied was obtained by securing spectrograms in the visible and ultra-violet ranges and comparing with various time exposures for the unfiltered light source. Percentage transmission at given wave-lengths were calculated.

The results show that the rancidity retarding properties of any film are determined by the absorption of ultra-violet and blue rays. Results also show that very small amounts of ultra-violet light have an extremely disproportionate effect in causing rancidity, which means that ultra-violet rays are autocatalytic in causing rancidity. The effectiveness of the blue rays for producing rancidity increases rapidly down to about 4,000 A; the ultra-violet range (4,000-2,900 A) shows maximum effectiveness.

Rancidity-retardation results obtained for red, yellow, green, or orange films indicate that these visible light rays are relatively weak in causing rancidity. The wave lengths of these rays are longer than 4,900 A. Retardation values of the red, yellow, green, or orange films and of other films appear to have no substantial relation to the percentage of red, yellow, green or orange rays transmitted (Table I), but appear to be directly related to the transmission of blue and ultra-violet rays.

Practical application of this knowledge is found in the development of highly protective yellow transparent cellulose films which have been used as packaging materials for about a year.

Storms

(Continued from page 483)

Next to go was the loose foundation of oyster shell and clay soil under one of the boilers that lay parallel to the water. Then the boiler itself began to sag. Tie-rods holding the two boilers together, had to be unbolted and piping had to be disconnected so that, if the first boiler went out, it would not drag the other one with it. Fortunately, however, it was not carried away, but the smokestack fell on the galvanized iron roof of the boiler room under which were gathered the 25 colored people who were just brought in by the truck together with about 75 more connected with the shore plant. All had sought shelter from the hurricane and driving rain. Eyewitnesses swear that every lady and gentleman of color in that group made a 100-yd. dash in 10 seconds flat in the wild scramble to get away from the falling stack.

From the 1933 storm, the owners of these plants learned that extra-heavy concrete bulkheads are the probable answer to hazards of this character. In repairing the damage, the bulkhead is now 3 ft. thick at the base, 1 ft. thick at the top and 6 ft. high and can be seen in the first illustration. While the 1935 storm did not reach the severity of the one two years ago, the experience shows that this judgment is probably sound.

In The Current of Events

- *FTC hesitates on food probe for lack of funds*
- *NRA consumer division will look into prices*
- *Dairy distribution system called "trouble spot"*
- *Government's case against packers is up again*
- *New York poultry industry likely to be licensed*

Investigation Held Up

IT LOOKS as though the investigation of the food industries by the Federal Trade Commission might be delayed until after Congress is back in session. Having been left without funds to do the job, the FTC has been sitting tight while trying to locate a source of money and to decide whether or not it should go ahead and run up a deficit. Washington observers predict that at least the preliminary work on the study will be carried out before Congress convenes again.

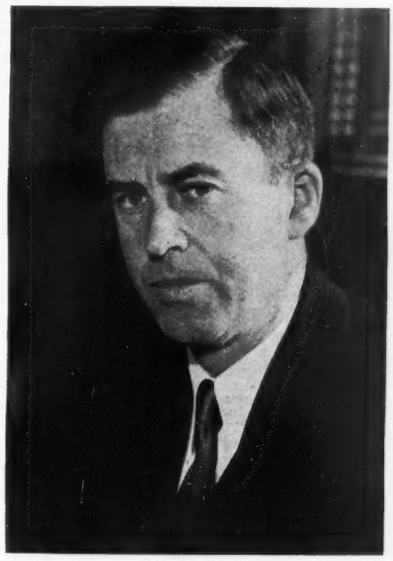
What Process Tax Means

"DURING the past year we have paid the government processing taxes equal to one and two-thirds times the total amount paid by all of our associate companies for salaries and wages, and these processing taxes are equivalent to a retail sales tax of from 14 to 20 per cent on all flour and most bread." In these words, Donald D. Davis, president of General Mills, Inc., Minneapolis, explained in dollars and cents the meaning of the processing tax on wheat. The statement was incorporated in a letter to stockholders to explain why the company had instituted legal action to enjoin the government from collecting the tax.

In Behalf of Consumers

ALTHOUGH the Blue Eagle is dead and buried, industry apparently has by no means heard the last of NRA. While there are no code administrators to worry about, there is a consumer's division headed by a one Walton H. Hamilton who is out to find "ways and means for the consuming public to get more for its money." Mr. Hamilton desires to eliminate the "trouble spots" in production-distribution systems, meaning that he wants to abolish inefficiency in production and distribution and do away with price-fixing methods unfair to consumers.

Nor are prices all. The consumers' advisor has declared that he will undertake to educate the public to recognize and encourage wider use of quality stan-



GETS HOT POTATO
Secretary Wallace, upon whom fell the task of enforcing the potato control law, which not only has the opposition of small growers and consumers, but for which no enforcement funds are available.

dards and grade labeling. He feels, however, that the quality of American products is high, on the whole, and the standards and labeling phases of his program he considers of minor importance.

The consumers division of NRA will publish the *Consumer*, and carry on consumer education through 200 county councils. Its most effective tool, however, probably will be a strong lobby on legislation which involves government regulation of prices or production methods.

Criticizes Dairy Industry

DISTRIBUTION is the "trouble spot" impeding consumption in the dairy industry. This is the conclusion drawn from an investigation by Walton H. Hamilton's consumer group of NRA. The report on the study points out that there is a tendency to rigid agreed prices in respective market areas, these prices being high enough to cover up much inefficiency.

The investigators feel that milk in the metropolitan distribution set-up is more or less a standard product, variations in quality of a certain grade put out by different companies being so small as to make the choice offered the consumer insignificant. In view of this, the report holds that the use of two to five different milk delivery trucks on every city street indicates pointlessly heavy expenses in distribution.

This report is only Part 1 of a two-part study, and it does not suggest remedies. Part 2, no doubt, will indicate what should be done. Opinions of Washington commentators are that some form of public-utility or semi-public-utility control may be endorsed.

Butter Sediment Survey

IN AN ATTEMPT to perfect a procedure which will permit the use of standard equipment in making sediment tests on cream and butter, American Association of Creamery Butter Manufacturers is conducting a national survey of methods for the determination of sediment. The work is being carried on by a number of selected laboratories located in different parts of the United States.

Potato Act Full of Bugs

CONGRESS dumped a peck of trouble into the lap of Secretary Wallace when it tacked the potato-control rider onto the AAA Amendments. Since the law was enacted, complaints have come in on all sides from producers and consumers. The Administration did not want the bill passed in the first place, and it realizes the hopelessness of trying to enforce it. However, Secretary Wallace has an "out." Funds for enforcement of the act were to be taken from the third deficiency bill, which was killed by the Long filibuster, and no action has been taken by Comptroller-General McCarl on the Secretary's request for $2,000,000 to set up enforcement machinery until the next session of Congress. Meanwhile, Secretary Wallace has called a meeting of potato growers for Oct. 3 to see if he can work out a voluntary agreement program.

Appeal to CR Subscribers

To BREAK the deadlock in their negotiations with CR directors, which have continued since they went out on strike Sept. 4, striking employees are carrying their fight against the labor policies of Fred J. Schlink and J. B. Matthews to the subscribers to Consumers' Research, Inc., publications.

In New York, before an audience of more than 1,000, the strikers on Sept. 12 ardently voiced their loyalty to the principles upon which the organization was founded. They recounted their experiences with the autocratic management and told their reasons for the formation of Technical, Editorial and Office Assistants Local No. 20055 and for the calling of the strike.

According to the speakers, the labor turnover has been at the rate of 75 to 80 per cent for several years; the usual wage for office workers was $13.13 per week; there had been no recognized schedule of hours; all employment contracts were on a temporary basis; and all employees were prohibited from participating in any outside activities without written consent.

The New York meeting ended with the unanimous adoption of resolutions by the subscribers present to aid the strikers and to set in motion the machinery to wrest the management of CR from the present autocratic control.

New Food Trade Group

TRADE ASSOCIATION leaders in the food industries have formed a new conference group to serve as a clearing house on legislative and trade matters. It parallels the food-industries committee which functioned during the early days of NRA. At the organization meeting Sept. 20, Paul S. Willis, president of Associated Grocery Manufacturers of America, was elected chairman of the group. In addition to A.G.M.A., there will be represented the National Association of Retail Grocers, National-American Wholesale Grocers' Association. National Retailer-Owned Wholesale Grocers, Food and Grocery Chain Stores of America and Voluntary Groups' Institute.

Rye, Peanut Regulations

REGULATIONS covering the recently enacted processing tax on rye were proposed early last month by the AAA, and a public hearing was held on them. These regulations define the first domestic processing of rye, on which the 30-cent tax is levied, as "the milling or other processing (except cleaning and drying) of rye for market, including custom milling for toll as well as commercial milling, but not including grinding or cracking thereof not in the form of flour for food purposes only." The first marketing year of the program is from Sept. 1, 1935, to June 30, 1936. Subsequent marketing years begin on July 1 and end on June 30 of the next year. Under the proposed program, producers will limit their acreage to 75 per cent of basic production.

The AAA also has proposed a program for diverting 1935-crop peanuts into oil. Under the first part of this plan, the Secretary of Agriculture would make payments to peanut oil millers for diverting farmers' stock peanuts into oil during the period from Sept. 16, 1935, to Nov. 15, 1935. Under the second part of the plan, the Secretary would ask the millers to submit bids for specified quantities of the stock peanuts at not less than specified minimum prices during the period from Nov. 16, to June 30, 1936. Payments would be made to millers on peanuts purchased and converted to oil.

STRIKE STOPS THE "OLD (PROPAGANDA) MILL"
The "Old Mill," as they dub the century-old building at Bowerstown, N. J., where Consumers' Research, Inc., has its headquarters, temporarily ceased to grind out Fred J. Schlink's consumer "education" when employees went on strike last month. Mr. Schlink, self-styled champion of the underdog, showed no sympathy for his employees when they asked for a union to protect their rights.

Informative Labels Wanted

"WOMEN ARE more interested than ever before in knowing about the products they buy." This was the opinion expressed by Ruth Atwater, of National Canners' Association, in a talk at Cornell University recently. Miss Atwater gained her information through letters from 300,000 homemakers of every income level, and from recent conferences with consumers in twenty states on what the labels on canned foods should tell. In keeping with the trend in consumer desires, National Canners' Association is working on a simple label with common household terms to describe the contents of the can.

May License Poultrymen

NEW YORK CITY'S chaotic poultry industry, from which sprang the famous "sick chicken" case that wrecked the NRA, seems about to be placed under federal control. At a hearing in Washington on Sept. 12, at which nearly 100 interested parties were present, the consensus of opinion was that the Secretary of Agriculture should designate the New York industry as coming within the terms of the recent amendment to the Packers and Stockyards Act. Such designation would authorize the licensing of the live poultry dealers.

The principal targets of attack at the hearing were the New Jersey Coop Co., which is said to rent coops to transfer

Conventions

OCTOBER

8-11—Association of Dairy, Food and Drug Officials, Milwaukee.
12-19—National Dairy Exposition, Arena, St. Louis.
14-16—International Association of Ice Cream Manufacturers, Hotel Jefferson, St. Louis. Robert C. Hibben, Barr Bldg., Washington, D. C., executive secretary.
17-18—National Association of Retail Ice Cream Manufacturers, Mark Twain Hotel, St. Louis, Mo.
17-19—International Association of Milk Dealers, Hotel Statler, St. Louis, Mo. R. E. Little, 309 W. Jackson Blvd., Chicago, secretary.
18-22—Institute of American Meat Packers, Drake Hotel, Chicago.
20 (Week of)—American Bakers' Association, Hotel Sherman, Chicago. Tom Smith, 1135 Fullerton Ave., Chicago, secretary.

NOVEMBER

4-5—New England Bakers' Association, fall meeting, Biltmore Hotel, Providence, R. I. Robert Sullivan, 177 Milk St., Boston, Mass., secretary.
12-15—Southern Association of Ice Cream Manufacturers, Miami, Fla.
18-22—American Bottlers of Carbonated Beverages, convention and exposition, Fifth Regiment Armory, Baltimore, James Vernor, Jr., 726 Bond Bldg., Washington, D. C., chairman of convention and exposition committee.

the fowls from railways to slaughter houses at 85 cents each whether they are needed or not; the New York Live Poultry Transfer Co., which does the trucking, and the Metropolitan Feed Co., alleged to be unduly generous with the corn fed at producers' expense. The practice of selling on a flat rate also was criticized.

Packers' Case Up Again

HEARINGS on the price-fixing activities of twelve meat packing companies have been renewed by Secretary Wallace. Testimony was taken in Washington on Sept. 16 to finish up the action started by the government in 1932, but little had been accomplished before illness of one of the attorneys for the packers caused the hearing to be postponed until Oct. 7. The most dramatic evidence introduced was an unsigned letter alleged to show conspiracy by the packers to fix prices in violation of the law. The letter in question, supposed to have been written by an employee of North American Packing Co. to a salesman for Goyer Packing Co., read, in part: "In line with our talk, I am sending you a list of minimum prices effective next Monday."

The government seeks a cease and desist order against the packers for violation of Section 202 of the Packers and Stockyards Act, such an order permitting criminal prosecution for future violations. The packers involved in the case include Armour & Co., Swift & Co., Wilson & Co., Morris & Co., Cudahy Packing Co., Jacob Dold Packing Co., John Morrell & Co., Memphis Packing Co., Abraham Bros. Packing Co., St. Louis Independent Packing Co., George A. Hormel & Co. and Birmingham Packing Co.

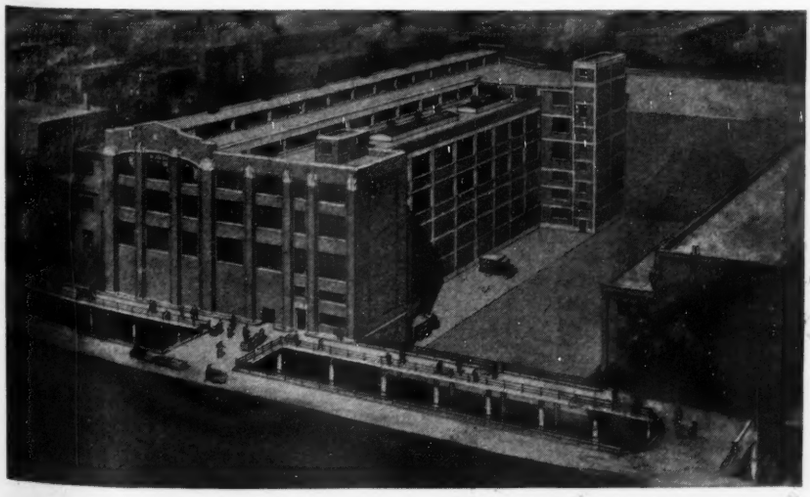
Dairy Relief Huge

A LITTLE more than 1 lb. of dairy products for every person in the United States had been distributed to people on relief up to Sept. 12, somewhat more than a year after the government's dairy products relief purchasing program was inaugurated in August, 1933. Valued at $20,350,131.60 the amount of butter, cheese, dry skim milk and evaporated milk distributed through Federal Surplus Relief Corp. totaled 127,054,077 lb. In addition to this, contracts have been let for 8,258,414 lb. of butter and dry skim milk with an estimated value of $1,189,282.45. The quantities and values of the different dairy products distributed up to Sept. 12 are given in the following table:

	Pounds	*Value*
Butter ...	63,163,429.62	$14,837,624.45
Cheese ...	17,970,382.3775	3,041,820.33
Dry Skim Milk ...	8,324,280.22	496,012.28
Evaporated Milk ...	37,595,984.75	1,974,674.54
Total.	127,054,076.9675	$20,350,131.60

Another Tax Problem

LIGHT-WEIGHT wheat coming in large quantities from the spring wheat sections, where heat and rust struck the crops, has brought up another processing-tax problem. With wheat weighing only a little over 50 lb. to the bushel, the 30-cent tax becomes a greater burden when figured on the basis of a barrel of flour. While 4.60 bu. of 60-lb. wheat will make a barrel of flour, it takes 5.26 bu. of the 50-lb. grain to fill a barrel after it has gone through the mill. Because of all this, the AAA was asked to change the basis of computing the processing tax from the bushel of wheat to the barrel of flour, but officials refused, explaining that it would take an act of Congress to make such a change. And to set itself square with farmers who have been receiving price discounts of more than 30 cents a bushel between the 60 and 50-lb. wheat, the Administration pointed out that only 4 cents of that could be attributed to the processing tax.



BIGGEST BEEF HOUSE—MOST MODERN

Architect's conception of the new $1,000,000 beef packing plant being constructed in Chicago by Armour & Co. Expected to be finished late this year, the beef house will provide facilities for slaughtering 20,000 cattle a week. The building will have a concrete arch supporting the roof to eliminate obstructions, and 30 per cent of the wall and ceiling space will be glass to provide plenty of light. There will be 230,000 sq.ft. of floor space.

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Concentrates

THERE ARE under consideration in the U. S. District Court at Buffalo, briefs of 18 packing and milling concerns which are endeavoring to carry their cases to the Supreme Court to test the constitutionality of the AAA . . . A reciprocal trade agreement between the United States and Colombia was signed Sept. 13 . . . An international treaty to protect the North Atlantic haddock fishery against commercial destruction is urged by the North American Council on Fishery Investigations.

THE FIRST government milk-pasteurization plant in Chile, constructed at a cost of $500,000, began operations recently . . . A plan to establish uniform regulation of the milk industries in New York, New Jersey, Massachusetts, Connecticut, Rhode Island, Pennsylvania and Maryland has been drawn up by the Governors' Emergency Milk Committee and will be submitted to producers and distributors . . . Vitamin A in its primary form, carotene, can be extracted from plants by a new process, and it will be used by Purina Mills Co., St. Louis, in livestock feeds.

NATIONAL HONEY WEEK will be celebrated during the week of Nov. 10 . . . The Motor Carrier Act, providing federal regulation of motor transportation under the Interstate Commerce Commission, was to go into effect Oct. 1 . . . NRA recently instituted a field survey in the baking and other industries to determine changes in labor and trade practice standards since termination of the codes.

BREAD stored at freezing temperatures in staling tests had an aroma and flavor as good or better than that of the fresh product, although it was partially stale, according to American Association of Cereal Chemists, New York section . . . Eight or ten of the largest wine producers in California are ready to put wine on the market in tin cans, says E. M. Sheehan, of Wine Institute . . . Misregister in color printing or lithographing, as in the case of labels, is caused by expansion of the paper as it accumulates moisture, a study by the Bureau of Standards reveals.

Men . . . Jobs . . . and Companies

Industry

• ARMOUR & Co., Chicago, will recondition and put into operation its packing plant at Tifton, Ga., which has been closed for twelve years.

• CALIFORNIA WALNUT GROWERS' ASSOCIATION is constructing in Los Angeles a warehouse which will be one of the largest industrial structures in the nation. Representing an investment of about $400,000, it occupies about 15 acres. It is a one-story, steel frame structure.

• CARNATION Co., Milwaukee, is erecting at Mt. Vernon, Wash., its fourth can factory.

• FURNAS ICE CREAM Co. will erect in Newark, Ohio, a $200,000 dairy and ice cream plant.

• GENERAL MILLS, INC., is establishing flour processing plants in Savannah, Jacksonville, Norfolk, Charleston, Mobile and Memphis.

• GREAT WESTERN SUGAR Co., Denver, will increase wages 10 per cent in its eighteen factories.

• HOLSUM PRODUCTS, Milwaukee, recently purchased the factory of General Mayonnaise Corp., Brooklyn, N. Y. This gives the company its fourth mayonnaise plant.

• IODINE CORP. of America has been organized in Milwaukee to produce iodine foods.

• KRAFT-PHENIX CHEESE CORP. will build a cold storage and distributing plant, to cost $100,000, in San Antonio. Kraft also will build a new $125,000 factory and warehouse in Canada.

• KENTUCKY MARCONI Co., Louisville, has appointed National Brokerage Co., Boston, to represent it in New England.

• KROGER GROCERY & BAKING Co., Cincinnati, recently established an Eastern division headquarters in Pittsburgh, under the management of Ronald I. Harry, formerly general sales manager.

• LIEBER BREWING Co., Indianapolis, will erect a $150,000 plant addition.

• MAILLARD CORP., Long Island City, N. Y., recently was sold in bankruptcy to a syndicate which plans to reopen and operate business under the Maillard name.

• OHIO CLOVER LEAF DAIRY Co., Toledo, will remodel its plant at a cost of $150,000.

• OLD FORT MILLS, INC., has been formed at Marion, Ohio, to extract oil from soya beans.

• PEVELY DAIRY Co., recently took over the wholesale and retail milk business of Dairies, Inc., St. Louis. The latter will concentrate on its ice cream and ice business.

• REYNOLDS PRESERVING Co., Sturgeon Bay, Wis., is experimenting with a cherry drink which can be processed and canned like other fruit and vegetable juices.

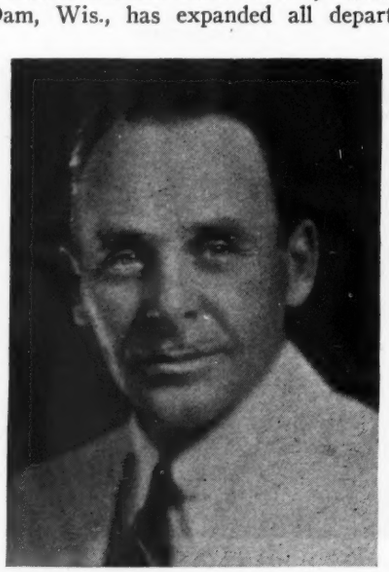
• STANDARD BRANDS, INC., New York, reduced transportation accidents by 5 per cent during the first half of the current year, over the same period of 1934. A safety campaign has been carried on for two years with 24 divisions competing annually for a silver-cup award.

• SWIFT & Co., Chicago, will grant time-clock employees vacations with pay after four years of service.

• TENNESSEE BISCUIT Co., subsidiary of United Biscuit Co., has established a new branch at Birmingham, Ala., under the management of C. K. Cook.

• WASHBURN CROSBY Co., INC., Chicago, has taken over Gold Medal Flour Co. H. E. Burgess continues as manager of Gold Medal.

• LOUIS ZIEGLER BREWING Co., Beaver Dam, Wis., has expanded all departments to increase production, and has made D. C. Cook treasurer and general manager.



W. A. MISKIMEN
He has been advanced from assistant to the president to general production manager of Stokely Bros. & Co., Indianapolis.

Personnel

• HARRY E. BISHOP, who was with American Institute of Baking for some years, has been appointed chemist in charge of the laboratory of Michigan Bakeries, Inc., Grand Rapids.

• EDWARD F. BOHN has succeeded D. J. McDermott as manager of the Swift & Co. branch at Hartford, Conn. Mr. McDermott has been moved to Oil City, Pa.

• E. J. CROFOOT recently was elected president of Southwest Dairy Products Co., and I. K. Friedman was made vice-president and general manager. The company will move its general office from Dallas to San Antonio.

• COL. GARRIT C. DEHEUS, former advertising executive, has been named assistant to Lester Le Feber, president of Gridley Dairy Co., Milwaukee. Martin Van Antwerpen, executive vice-president, becomes general manager; Charles O. Kelly moves up to general superintendent in the milk division.

• ERNEST DESPORTE, who formerly operated a New Orleans packing company, now is manager of Biloxi Oyster Exchange.

• HENRY ENGEL, for 58 years with New Ulm (Minn.) Roller Mill Co. and long its head miller, retired Sept. 1. He is succeeded by his son, Jacob, for fifteen years his assistant.

• L. B. FALB, assistant secretary, assistant treasurer and comptroller of Washburn Crosby Co., Inc., Chicago, has become assistant to the president, H. R. McLaughlin.

• G. T. GUSTAFSON, resigned general manager of Biltmore (N. C.) Dairy Farms, is in charge of the new sales branch and warehouse opened at Atlanta by Creamery Package Co.

• P. I. HENDERSON, who has been district manager in North and South Carolina for Foremost Dairies, returns to Atlanta to supervise all branches in Georgia and the Carolinas.

• GEORGE R. KELLY has been named manager of the Dexter, Iowa, canning plant of Mount Pleasant Food Products Co.

• S. C. LUTZ has succeeded Harold L. King, resigned, as plant manager of National Grain Yeast Corp., Belleville, N. J. Roy R. Irvin has been made chief chemist; John Gardner has joined the staff to work on special research; and Charles Bender succeeds E. L. Kitzmeyer in charge of pure culture work.

• WALTER H. MANN has been named to succeed Willy de Perrot as president of Wilbur-Suchard Chocolate Co., Philadelphia.

• CHARLES E. MISCH, formerly with Cushman Sons, Inc., and Schulze Baking Co., now has charge of the technical field service, sales and service division in the New York territory for Read Machinery Co., Inc.

• EVERETT D. MITCHELL becomes manager of Biltmore (N. C.) Dairy Farms to succeed G. T. Gustafson, resigned.

• M. D. MIZE, treasurer of American Association of Cereal Chemists and chemist with Omaha Grain Exchange, on Oct. 3 joins the chemical and research staff of Wallace & Tiernan Co., Inc., Belleville, N. J.

• H. E. MUNGER recently was made manager of the Louisville branch of Booth Fisheries.

• JAMES R. NICHOLSON, who since 1930 has been an assistant to Col. Jacob Ruppert in his New York brewery, now is president of Croft Brewing Co., Boston.

• B. E. PALMER succeeds A. J. Enloe as manager of the Bedford, Iowa, plant of Cudahy Packing Co. Mr. Enloe goes to Chicago.

• L. H. PATTON, formerly chief chemist for State Mill & Elevator, Grand Forks, N. D., is back with the company as production superintendent.

• GUDOLPH POVERUD succeeds William M. Robbins as production manager of Walter Baker & Co., Dorchester, Mass., Mr. Robbins becoming manager of General Food Corp.'s Eastern plants.

• H. W. PUTNAM, secretary of American Association of Cereal Chemists, will leave Hays City (Kan.) Flour Mills to become chief chemist for Igleheart Bros., Inc., Evansville, Ind.

• FRED SIX, for seventeen years a South American representative of Swift & Co., has been advanced to general manager in South America to succeed the late Burt Kennedy.

LEONARD G. BLUMENSCHINE
For the past twelve years executive vice-president of Hecker H-O Co., he now becomes president of Best Foods, Inc., New York.

• JESS B. SMITH has been made full-time president of Millers' National Federation. He has quit as manager of Shellabarger Mill & Elevator Co., Salina, Kan., where he is replaced by Elmer W. Reed.

• DR. MAX. A. SCHNELLER, research chemist with Applied Sugar Laboratories, joined the chemical staff of Hoffman Beverage Co., Newark, N. J., on Sept. 9.

• W. J. TOWEY has joined W. E. Long Co., Chicago, as production service manager. He formerly was with General Mills, Inc.

Deaths

• JOHN J. BALLWEG, 53, president of Novia Candy Co., Brooklyn, Sept. 2.

• JACOB J. DINKEL, 78, for 37 years proprietor of Mid City Bakery, Omaha.

• WILLIAM FINCH, 62, founder and president of Dairy Farms Co., Dayton.

• LOUIS B. GLOVER, 69, president of Churchill Fruit Syrup Co., Grand Rapids, Mich.

• CHARLES H. GREBENSTEIN, JR., 41, production executive of Henry Heide, Inc., New York.

• EDGAR C. HARDACRE, 54, owner of East Side Jersey Dairy, Anderson, Ind.

• HERBERT S. HARP, 77, president of Ready-Jell Manufacturing Co., Green Island, N. Y., Aug. 26.

• H. H. HARRIS, 69, president of Harris-Woodson Co., Lynchburg, Va.

• J. F. JAMES, manager of Austin (Texas) Baking Co., Sept. 3.

• LOSEO L. JOHNSON, 72, president of Johnson-Fluker Co., Atlanta, Aug. 31.

• DAVID MICHAEL, 64, president of the Philadelphia vanilla firm bearing his name, Sept. 1.

• A. O. SHAFER, 60, one-time president of Indiana Canners' Association and for 30 years with Snider Packing Corp., Aug. 24.

• E. L. WALK, 31, production manager for Sugar Crest Doughnut Co., Portland, Ore.

• GEORGE H. WITHINGTON, 52, manager of Loose-Wiles Biscuit Co. branch at Springfield, Mass., Aug. 30.

• GEBHARDT W. ZEIGER, 88, former partner in the old Woelffer pork packing plant, Chicago, Aug. 21.

Associated Industries

• ARTHUR H. APFEL, 70, founder of Illinois Can Co. in 1890 and former vice-president of American Can Co., died Sept. 4.

• CARBONDALE MACHINE CORP., Harrison, N. J., has been organized as a subsidiary of Worthington Pump & Machinery Corp. to manufacture and sell refrigerating and air conditioning equipment.

• COLEMAN LAMP & STOVE CO., Wichita, Kan., manufacturers of coffee brewing equipment, are opening offices in New York. Charles E. Page is retained as consultant.

• CONTINENTAL CAN CO., INC., will erect a $1,000,000 plant adjacent to its present plant in Chicago.

• HARVEY FELDMEIER, 64, chief engineer of Cherry-Burrell Corp. and holder of 51 dairy patents, died Sept. 19.

• DR. F. F. FITZGERALD, who for fifteen years has had charge of American Can Co.'s research laboratories at Maywood, Ill., now becomes director of research for the company, with offices in New York. R. H. Lueck succeeds him at Maywood.

• REPUBLIC STEEL CORP. has opened a sales office at Kansas City, Mo. The company also announces employment of John W. Carpenter as assistant manager of sheet and strip sales.

• STOKES & SMITH CO. has erected a $50,000 addition to its plant at Summerdale, in Philadelphia.

PATENTS

Bread Doughs Mechanically Perforated to Prevent Formation of Gas Holes in Finished Loaves—William F. Foutch, Jr., Columbus, Ohio. No. 2,010,182. Aug. 6, 1935.

Combination Unit for Hulling and Cleaning Oats—Edward Lorenzen, Minneapolis, Minn. No. 2,011,110. Aug. 13, 1935.

Cheese Processed by Heat Treating With a Small Amount of Glucono-Lactone—Richard Pasternack and Richard W. Burnham to Charles Pfizer & Co., Brooklyn, N. Y. No. 2,011,174.

Electrical Method for Aging Wine and Other Beverages Stored in Barrels—Joseph P. Spang, Quincy, Mass. No. 2,011,204. Aug. 13, 1935.

Dry Seasoning Mixture for Ground Meat—Arthur A. Levinson, Chicago, Ill., one-half to Hugh E. Allen, Chicago, Ill., and one-half to Albert E. McCaleb, Evanston, Ill. No. 2,011,321. Aug. 13, 1935.

Drying of Frozen Foods Delayed by Storage in Containers Subjected to Air Saturated With Steam Before Packing—Harden F. Taylor, Scarsdale, N. Y. and Alexander H Cooke, New York, N. Y., to the Atlantic Coast Fisheries Co., New York, N. Y. No. 2,011,426. Aug. 13, 1935.

Discoloration of Cut Fruits and Vegetables Inhibited by Treatment With a Sulphydryl Compound—Arnold K. Balls and Walter S. Hale, Washington, D. C., to free use of the Public. No. 2,011,465. Aug. 13, 1935.

Jell-Forming Sea Weed Purified for Use as Emulsion Stabilizer—William Seltzer, Passaic, N. J., to Kraft Phenix Cheese Corp., Chicago, Ill. No. 2,011,594. Aug. 29, 1935.

Tapping Bush for Beer Barrels—John F. McKeage, Montrose, Pa. No. 2,011,937. Aug. 20, 1935.

Hermetically Sealed Container for Vacuum Packing With One End Constructed to Exert Pressure on Contents and Prevent Collapse of Container Walls—John M. Young, Brooklyn, N. Y., to American Can Co., New York, N. Y. No. 2,012,213. Aug. 20, 1935.

A Sweetening and Grease Absorbing Powder for Dusting Doughnuts Consisting of at Least 25 Per Cent of Disrupted Starch Grains—Carroll L. Griffith to the Griffith Laboratories, Inc., Chicago, Ill. No. 2,012,506. Aug. 27, 1935.

Foods Subject to Air Deterioration Protected in Container Closed by Clamping Together Interlocking Parts Which Reshape Package and Form Seal Under Pressure—Elmer E. Eldredge, Wilmette, Ill., to Kraft Phenix Cheese Corp., Chicago, Ill. No. 2,012,529. Aug. 27, 1935.

Bake Oven With Traveling Tray Carrier Passing Around Stationery Hearth Baking Compartment But Inside Main Shell of Oven—Henry Rottersmann, Webster Groves, Mo. No. 2,012,549. Aug. 27, 1935.

Built for Efficiency

(Continued from page 489)

the rear are located two sharp freezers, and in front of these is a large cooler for sweet-pickle meats, this extending all the way across the floor. In front of the s.p. cooler is an air-conditioned room in which smoked meat is held and in which meats are wrapped. This cooler is not as long as the s.p. cooler, there being at the end of it a foyer giving access to the elevator, the s.p. cooler and the processing department; access to the freezers is through the s.p. cooler. The processing department is between the smoked-meat room and elevator foyer on one end and the smokehouses and offices on the other.

This arrangement contributes much to the smooth flow of materials through the plant, the rooms being grouped around the elevator on which supplies come up from the shipping platform and on which the finished products return to be loaded into trucks. Overhead rails facilitate materials handling in the processing department and in the smoked-meat-and-wrapping room.

The outstanding materials-handling equipment in this department, however, is an electric traveling hoist which lifts meat into and out of the soaking vats and carries it to the washing table in front of the smokehouses. In soaking meats, the customary practice is to put the product in the vats one piece at a time and take it out the same way. But Morrell has mechanized this operation, putting the meat in large perforated iron baskets, or cages, 300 pieces to a cage, and taking the cages to and from the vats by hoist with much saving in time and labor.

NOW that the layouts of all departments have been discussed, the flow of materials can be traced. All supplies of meat come in from the car-unloading platforms, and all orders go out on trucks from the opposite side of the shipping room. Incoming beef carcases go to the sales cooler and from there to the delivery trucks via overhead rails.

Incoming barreled products are taken on jack-lift, platform trucks to the cellar cooler, and fresh-pork products are handled by the same means, but go to the sales cooler. Jack-lift trucks also carry boxed sweet-pickle meats to the cooler on the second floor and from there to the processing department. In the processing room, some of the meat goes into the soaking vats and then to the smokehouses, and part of it goes to the ham-boning table. Coming out of the smoke, the meat is hung on trees which move along overhead rails to the smoked-meat room, passing over a rail scale so that the smokehouse shrinkage may be computed. After the boned hams have been cooked, they are placed on a galvanized iron rack truck to be taken to one of the freezers for chilling. Then they are conveyed on the same truck to the wrapping room, wrapped meats being carried to the shipping platform by jack-lift platform trucks and elevator.

Morrell finds that meat trees hung on rollers and moving along overhead rails require less labor and provide greater flexibility than trees mounted on wheels and rolled over the floor. Moreover, they require less space, particularly when empty, do not clutter up the passageways and do no damage to floors.

In the matter of trucks for handling boxed meats, the company finds the jack-lift platform truck most efficient. Much material is stored on the platforms, and this saves unloading the trucks, piling the material and then loading the trucks again when the produce is to be moved. And when the meats are to be shipped out, the platforms are picked up on the jack-lift trucks and taken to the delivery truck being loaded, a portable scale on the platform enabling the meat to be weighed directly into the truck.

The traveling smokehouses contribute much to efficient materials handling in this plant. Although each of these is equivalent to three stationary houses, one on top of the other, all the meat is put in and taken out on one floor. This saves hauling the meat up and down in an elevator and moving it across the floor between elevator and smokehouse. Furthermore, with the revolving smokehouse, it is not necessary to move the meat from one position to another during the smoking.

IN COVERING the attributes of the Morrell branch in Brooklyn, something must be said about the materials used in the floors and walls, flooring, in particular, being a headache to most food manufacturers. In the processing department, where there is a great deal of wear and tear and disintegrating action of fats and frequent washing, the floor is of hard brick with concrete curbs; the walls of glazed tile. A cement floor is used in the basement cooler where there are overhead rails and little trucking. The floor in the sales cooler is of granitoid with glazed tile covering the walls. On the second floor, the sweet-pickle cooler has a cement floor with brick aisles for trucking, and the walls are of glazed tile. The floors in the two sharp freezers are of wood laid over 6 in. of cork. The smoked-meat hanging room has cement and granitoid floor and curbs, and glazed tile walls. The shipping platform is of asphalt plank.